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Staff Suggestions

THE details we published in our issue of July 20 regarding the invention, by a G.W.R. employee, of an improved type of stretcher designed primarily for the conveyance of invalids by train, call to mind the fact that it is just 21 years since the G.W.R. introduced the practice of inviting suggestions from the staff. The first announcement of the arrangement was made by Mr. Frank Potter, then General Manager of the G.W.R. in the presidential address at the opening meeting of the tenth session of that company's Lecture and Debating Society. In our issue of October 24, 1913, we said that we regarded this development as one likely to have far-reaching effects, and that the machinery set up for dealing with staff suggestions and inventions would be welcomed by the lower grades in the railway service, among whom there was no lack of ideas but who showed reluctance to submit them through "the usual channels." So far as the British railways were concerned, the G.W.R. was the pioneer of this scheme, which is now general practice in all the companies. As the G.W.R. arrangements "come of age" this autumn, it is appropriate to remark that during the past 21 years approximately 49,000 staff suggestions have been submitted and considered. Of recent years, the excellent proportion of over 17 per cent. has usually been adopted each year, while some of the rejected schemes are not altogether wasted, as they act as inspiration for further suggestions of more practical value. Staff ingenuity has been found to cover every aspect of railway practice, from proposals to improve machine tools to workable ideas for simplifying time-tables or attracting fresh custom.

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"It's Quicker by—Plane!"

A further example of the increased air-mindedness of the transport world was afforded on Monday last, July 30, by the inauguration of the Birmingham-Bristol-Southampton-Cowes lines of Railway Air Services Limited which has been rendered possible by the co-operation of the Southern and Great Western Railway Companies. The proud and confident slogan that "it's quicker by rail" does unquestionably apply where the transportation of the masses is concerned: but for the individual in a hurry—and especially the individual with money to burn—there is no gainsaying that nowadays the plane's the thing. Consider: the quickest time by express train and boat from Birmingham to the Isle of Wight is 5 hr. 55 min.—or more than thrice that taken by the new air service. An even greater saving of 7 hr. 5 min. will be given Railway Air Services' passengers from Liverpool who will connect with the new service at Birmingham; while from Bristol the journey time will be reduced from 3 hr. 53 min. to 50 min. Further particulars relating to this air service will be found in our news section, in an article dealing with the preliminary flight over the Birmingham-Cowes route which took place on Saturday last and which, despite the fact that the weather was not absolutely ideal for such a purpose, was voted by the participants an all-round and unqualified success.

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The Week's Traffics

For the 30 weeks of the year to date the four group companies together record estimated aggregate traffics of £83,500,000, which are higher than those for the corresponding period of 1933 by £3,763,000, or 4·50 per cent. In the returns for the past week the Great Western total shows no change and the Southern an increase of only £1,000. The G.W.R. continues to show a disappointing fall in passenger receipts, while the Southern figures also show a decrease in this category for the past week.

	30th Week				Inc. or dec.	
	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date	
	£	£	£	£	£	%
L.M.S.R. ..	+ 25,000	+ 9,000	+ 6,000	+ 40,000	+ 1,565,000	+ 4·88
L.N.E.R. ..	+ 6,000	+ 9,000	+ 3,000	+ 18,000	+ 1,538,000	+ 6·63
G.W.R. ..	− 8,000	+ 9,000	− 1,000	−	+ 402,000	+ 2·97
S.R. ..	− 3,000	+ 4,000	—	+ 1,000	+ 258,000	+ 2·37

The London Transport returns show increases of £100 for the past week, and £31,800 for the aggregate of the first four weeks of the board's second financial year. In order to make as adequate comparison as possible with the figures for last year when some bus and coach undertakings had not been absorbed, the returns for that year have been adjusted on the basis of the best information available. It is the board's intention to publish the weekly traffic receipts in this way until the figures become comparable without adjustment.

* * * *

"In Town To-night"

Thanks to railway enterprise this phrase—familiar through the agency of the B.B.C.—has now acquired a new significance to dwellers by the Thames estuary. Encouraged by the success which has attended the efforts to induce many of those "in City pent" to spend an evening at a country place or seaside resort by means of a cheap service of fine weather trains, the L.M.S. and

L.N.E.R. have now gone one better and provided a new facility in the opposite direction, viz., a series of evening excursions to London. The trips in question will be run on Wednesdays and Thursdays during August and September and will be available from various stations in the Southend area, the return fare being only two shillings third class. Existing lightly loaded trains will be utilised, leaving Southend between 4 and 5 p.m. and returning from town about midnight. It will be interesting to see whether the rural public will respond to the opportunity thus presented with the same alacrity as has characterised the "fine weather train" seekers in the various urban districts. They probably will; for a chance such as this to see the sights of London is not to be lightly disregarded. Who, for the sake of a two shilling fare, would fail to be "In Town To-night"—seeing, maybe, some marvellous "movie" show, or sampling a cocktail at the Carlton, or even indulging in an hour's decorous frolic at the Ritz?

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High Speed in Belgium

An editorial note in our July 13 issue drew attention to the enterprise which is being displayed by the Belgian National Railways, in the carrying out of such important engineering works as the new direct line between Brussels and Ghent. This enterprise is no less apparent in the current Belgian time-tables, which reveal some remarkably high speeds, in view of the short distances between stops in that densely-populated country. For example, six *trains blocs*, or limited set-trains, daily cover the 33·4 miles of the new line between Ghent and Brussels (Midi) in 33 min., which is at a speed of 60·7 m.p.h. from start to stop, and nine trains in the reverse direction require only one minute more, for a slow approach to the Brussels terminus. Over the level 26·5 miles between Ghent and Bruges six trains are now booked in the very smart time of 26 min. start-to-stop (at 61·2 m.p.h.), and four others in 27 min., so that the Brussels-Ghent-Bruges service alone claims 25 runs booked at 58·9 m.p.h. or over. Another notable improvement which has been effected is on the Brussels-Liége route, which now has a very frequent service of express trains covering the 62¼ miles in 75 min. eastbound and 72 min. westbound. The latter is the more remarkable in that it includes the formidable 1 in 30 ascent from Liége to Ans. One condition precedent to the institution of these fast times has been the raising of the Belgian speed limit to 120 km.p.h.

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Paris-Brussels Expresses

Another evidence of the activity of the Belgian National Railway administration in improving the capacity of its main lines for speed is forthcoming in the further acceleration this year of certain of the principal express services between Paris and Brussels. For example, the North Star all-Pullman express now makes the non-stop journey of 193·1 miles from Paris to Brussels in 191 min., which is at an average start-to-stop speed of 60·7 m.p.h. By mutual arrangement, these non-stop Pullman trains and other expresses not stopping at the Franco-Belgian frontier are worked throughout by the engines of the Northern Railway of France, and it is significant that it has been possible slightly to ease out the very tight timings to which these trains have lately been working on the French side of the frontier, and at the same time to secure a slight increase in the overall average speed of the service, on account of the much higher speed now permissible in Belgium. A total of ten trains, five in each direction (four in all non-stop, and the remainder inclusive of all stops), now maintain an average overall time of 3 hr. 21 min. for the complete series, the average speed working out at 57·7 m.p.h. Probably it is only a matter of time before the two capitals are linked together with 3-hr. expresses; the best time now stands at 3 hr. 11 min., and on the showing of present-day Nord locomotive performance, could easily be cut below this figure.

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The Kilburn Collision

Within a period of fourteen months there were five collisions in areas controlled by automatic signals. The first of these was dealt with in our issue of August 18 of last year; the second, third and fourth were discussed by us on April 13 last and, now, the report by Colonel Trench on the fifth collision is dealt with on a subsequent page of the present issue. It relates to the case of a light engine running into an up passenger train on the L.N.E.R. at Kilburn on Easter Monday, April 2. In all five accidents the observation of the stop-and-proceed rule was in question, but as that subject is receiving attention at the hands of the companies Colonel Trench makes no recommendations on the present occasion. The Kilburn collision was like the Three Bridges and the Alne accidents—the first and the fourth of the five—in that the driver of the second train was misled into thinking that he had a clear road by seeing the signal at "yellow" for the train in front of him. It differed, however, from all four of the previous cases by reason of the driver of the light engine having over-run a "red" signal and then not having at once pulled up, even although he had passed it, and obeyed the stop-and-proceed rule by waiting one minute and then proceeding cautiously. The man was also unaware that the stop-and-proceed rule, as laid down in the new rule-book of January, 1933, has been amended and now provides that if the next stop signal, under stop-and-proceed working, should be at "caution" or "clear" cautious running must be maintained until the next stop signal beyond.

* * * *

G.W.R. Valuation for Rating

The Railway Assessment Authority has completed its provisional valuation of the Great Western Railway (including docks and canals) made under the Railways (Valuation for Rating) Act, 1930, and, subject to any representations to the Authority and any appeals to the Courts, it will govern the liability of the railway company for local rates, and for contributions to the Railway Freight Rebates Fund, during the period April, 1931, to April, 1936. Total average net receipts of the undertaking for the years 1928-29 (the governing period under the Act for the first quinquennial valuation) are stated to be £7,560,000, and the total net annual valuation (the "cumulo") £2,800,000, a figure which compares with an existing rating assessment of about £2,300,000. The work of dividing the total of £2,800,000 fairly and equitably between all the rating areas and parishes on the system has involved the referencing of about 2,000 stations and works and the estimation of train-mile receipts for every section of line. The G.W.R. system (including joint lines) extends into 32 counties, 455 rating areas (including 26 county boroughs), and 1,973 parishes or other separately or differentially rated areas. Of the total of £2,800,000 there has been allocated to the railway proper £2,533,012, to the docks £265,000 and to the canals £1,988.

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Exchange Service on Swiss Federal Railways

Second to the inconvenience of the customs examination in the mind of the traveller on the Continent comes the

necessity of changing his money as he crosses the frontiers. Fearing unfavourable treatment by the private concerns to which he normally applies for this service, particularly in these days of fluctuating exchanges, the tourist is tempted to change as little as possible, with resultant inconvenience to himself and loss to the countries he visits. Therefore by instituting its own exchange facilities at frontier stations and elsewhere, the Swiss Federal Railways Administration has at once benefited itself and its foreign passengers. Since the primary object is the convenience of travellers, a margin of profit not exceeding one per cent. is standardised for normal transactions. Large denominations of a given currency are changed into smaller pieces of the same currency without charge. Commission is payable only once on conversions between two foreign currencies. By thus catering for exchange transactions other than those into and out of Swiss money, the Federal Railways provide a valuable service for travellers passing through the country. An article on these facilities in the June issue of the *Bulletin des CFF* shows that the railway administration now has its own *bureaux de change* at Basle CFF, Bucks (St-Gall), Chiasso, and Zurich Central. In addition, the booking offices at twenty-six stations and the pursers of the Lake Constance steamers are authorised to handle exchange business.

* * * *

The Great Western and South Wales

The relation between the Great Western Railway and the communal and industrial life of South Wales was likened to the two blades of a pair of scissors by Sir Robert Horne at a luncheon in Cardiff on Wednesday. The occasion was a visit of inspection by the Chairman, Directors and Chief Officers of the Great Western to Cardiff and Newport, and the opportunity was taken by the company to entertain at luncheon representatives of the chief trading interests of South Wales. In our news section will be found a report of the speeches at the Cardiff function, which reflected the cordial relations existing between the great industries centred in South Wales and their chief transport agency. Since the 1921 Railways Act the Great Western has absorbed all the local railways and taken over the docks, but not merely so. With enterprise amounting to an act of faith in the future, the company has undertaken a wholesale scheme of development and modernisation—an idea of which our readers will already have gained from the Special Number of THE RAILWAY GAZETTE issued on December 8 last—and it was to see what progress had been made that the present visit was undertaken. The fine new station at Cardiff, now complete, is a token of the desire of the Great Western to emulate the city fathers of Cardiff in providing civic buildings famous throughout the land, and further indicates the up-to-dateness of everything else Great Western in South Wales.

* * * *

Track Circuits without Bonds

Since 1927 the Missouri-Kansas-Texas Railroad has not installed bonds for track circuits on any new rail, and now has in service 125 miles of unbonded track on automatically signalled lines. A recent issue of *Railway Engineering and Maintenance* drawing attention to this state of affairs, records that during certain relaying in 1926 it was decided to postpone bonding the rail joints until lifting and ballasting had been completed, in order to avoid damage of the bonds. Despite a delay of about three months before bonding was installed, no track circuit failures occurred during this period. Further experiments of the same sort were carried out, and it was ultimately found that the electrical resistance could be kept sufficiently low to carry the track circuit by simply maintaining the fishbolts tight. Twenty-four inch fishplates are used for the 95 lb. R.A. section rail and the bolts are of heat-treated steel and equipped with spring washers. The fishplates are oiled before being fixed; and once a year subsequently each joint is oiled by means of a pressure pump having a nozzle that sprays a good grade of lubricating oil, thinned with paraffin, behind the plate. Besides the economy of this system, a better top is maintained on the track because of the necessity to keep the bolts tight. Further, should a fishplate break, the track circuit is automatically interrupted and the signals, of course, go to "danger." Records show that fewer track circuit failures per mile occur on non-bonded track than on track that is bonded.

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3 ft. 6 in. Gauge Speeds

Some interesting comparisons of long-distance speeds over the 3 ft. 6 in. gauge appeared in a recent issue of *The Railway Circle Record* of Capetown. Japan and Java jointly hold most of the records for narrow gauge running: over the 373 miles between Tokyo and Kobe and the 512 miles between Batavia and Soerabaja respectively there is a dead heat in the overall speeds, stops included, of the best trains, which in both cases are 41·5 m.p.h. The Java Limited makes both the longest and fastest runs at present operative over either 3 ft. 6 in. or metre gauge track, the former being a non-stop journey over the 133·5 miles from Batavia (Weltevreden) to Cheribon in 172 min. eastbound and 171 min. (46·8 m.p.h. average) westbound, and the latter the run from Solo to Madioen, 60·8 miles, in 77 min., at 47·4 m.p.h. An earlier report that a 50 m.p.h. schedule had been introduced in Java proved to be without foundation, the distance between Batavia and Buitenzorg having been overestimated. The best long-distance running on the South African Railways is over the 455 miles between Johannesburg and De Aar, covered at 35·6 m.p.h. inclusive of stops; after that come the New Zealand Government Railways, with average speeds of 29·7 m.p.h. over the 369 miles between Invercargill and Christchurch, in the South Island, and 29·6 m.p.h. over the 426 miles between Wellington and Auckland, in the North Island. The best that the Rhodesia Railways can produce is to run from Bulawayo to Salisbury, 296 miles, at an average speed of 27·5 m.p.h.

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Electric Power in Locomotive Sheds

The Chicago, Rock Island & Pacific Railway has made a net saving of $13,000 (£2,680) a year on the cost of operating a locomotive and car depot in St. Louis by utilising electric motors to drive compressors, induced draft blowers for locomotives and machine tools, which were formerly operated by steam. To effect the desired changes a pole top transformer station was erected and the necessary changes made for substituting alternating-current for direct-current motors and electric for steam drives. A 20 h.p. a.c. motor, replacing a similar d.c. one, is used for driving a line shaft serving 14 machine tools; and the former pneumatically-operated turntable is now driven by two 20 h.p. electric motors. The high pressure steam plant formerly used consisted of two boilers, only one of which was worked under normal conditions. Since the change over one boiler, working at the reduced pressure of 15 lb. per sq. in., is used for heating purposes. The working of the old plant required 250 tons of slack coal a month; now only 90 tons of coal are used and the boilers are shut down about 6 months of the year. In a descriptive article the *Railway Age* records an appreciable saving of labour by the change over, and of course there is much less smoke emitted.

Transport in Malaya

A COMMITTEE appointed by H.E. the High Commissioner to investigate the sources of revenue of the Federated Malay States Railways and to consider ways and means of increasing such revenue has recently reported in favour of a system of transport co-ordination and control on a wide basis. The main line of the F.M.S.R. runs for 580 miles from Singapore in the south through Johore (the Johore State Railway being leased), Negri Sembilan, Selangor, Perak, Province Wellesley, Kedah and Perlis to Padang Besar on the Perlis-Siamese frontier, where a connection is made with the Royal Siamese State Railways. There is also the East Coast line of 328 miles from Gemas (137 miles from Singapore) on the Johore-Negri Sembilan border to the port of Tumpat in Kelantan, on the China Sea. A line of $11\frac{3}{4}$ miles from Pasir Mas (Kelantan) to the Golok River connects the East Coast section with the Siamese Railways. Malacca and four other west-coast ports are connected by branches with the main line, and steam ferry services are run between Prai (Province Wellesley) and Penang, and Palekbang (Kelantan) and Kota Bharu. The route mileage is 1,067, on the metre gauge, and 17 miles are double-tracked.

World-wide trade depression undoubtedly stands foremost among the causes which have led to the phenomenal fall in railway revenues since 1930. The fall in commodity prices has made it impossible to increase railway rates which have had, on the contrary, to be reduced in order to retain traffic. This is particularly noticeable in the case of rubber and certain classes of merchandise traffic. The adherence of Malaya to the international agreements for restriction of the output of tin ore has involved the railway directly in a considerable loss of revenue, and this reduced output also results in a reduction in the quantity of fuel consumed, and of stores, &c., imported for use in mines. Competition from other forms of transport in certain commodities has also had a grave effect upon railway income. This diversion of traffic, especially in rubber, has been checked to some extent by reduction in rates and by the introduction of special rates, but such steps have not prevented a serious fall in the volume of railway traffic.

Road conveyance traffic can skim off a large part of the high grade goods transportation, paying little attention to that which is low rated. The railways are therefore left with an insufficient proportion of the former to make good the under-average proceeds of the latter; and little or none of the leeway can be recovered by scaling up the low grade rates in the face of the existing level of basic commodity prices, which is in fact so low as to warrant still smaller rates for low grade traffic. Low priced road transport, if secured at the expense of the safety and well-being of the persons and goods carried, of the personnel engaged in the traffic, and of the general public who have to pay for the maintenance of the roads, cannot be to the ultimate advantage of the community as a whole. The railways are statutorily required to comply with regulations designed to secure the safety of passengers and the safe custody of goods carried by them in their capacity as public carriers. The committee is of opinion that not until compliance with regulations of a similar nature is required of all public transport services can the value of the public services rendered by them to the community at large become fairly comparable and the prices thereof become the sole criterion of their relative cheapness. The railways are still essential to the economic life of the country, and should be placed in a position to play their due part in the general effort to secure the maximum economic advantage to the country. The committee submits no recommendation regarding goods rates, but considers that the railway administration should explore the possibility of increasing revenue by reduction of second and third class fares. But the main recommendation is that even when the economic recovery of the country materialises the railways will not obtain a full share of the benefit of that recovery unless the impetus it supplies be directed into the channels of a balanced transport industry.

The committee considers a system of transport co-ordination and control on as wide a basis as possible, to be essential, and recommends legislation which would constitute transport areas, under the control of boards for licensing motor vehicles carrying passengers or goods for hire or reward. Appreciable benefit would accrue from its application to the Federated Malay States alone (Perak, Selangor, Negri Sembilan, and Pahang) should political considerations prevent its extension to the Unfederated States of Johore, Kedah, Perlis, and Kelantan, or to the Straits Settlements. This proposed co-ordination is intended to ensure that railways and road transport be placed on a basis of equality in competition. It is not designed or intended to operate as a repressive regulation of road transport.

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Home Railway Interim Dividends

THE interim dividend announcements of the four group railways have certainly served as a corrective to the optimism of some shareholders. All the distributions are the same as those of a year ago except in the case of the London Midland & Scottish, which increases the rate paid on the £118,908,762 of 4 per cent. senior preference stock from 1 to $1\frac{1}{2}$ per cent. and on the £9,695,832 of 5 per cent. redeemable preference stock, which ranks *pari passu* with it, from $1\frac{1}{4}$ per cent. to $1\frac{7}{8}$ per cent. This means an additional payment of £655,141 out of the £1,000,000 additional net revenue earned during the half-year. The London & North Eastern pays in full for the half-year on the first and second 4 per cent. guaranteed stocks, but holds over the question of a distribution on the £48,222,669 of 4 per cent. first preference stock and on the £6,000,000 of 5 per cent. redeemable preference stock, which ranks *pari passu* with it, until the accounts for the whole year are available. In the case of this company the additional net revenue earned during the half year is £686,000, but as we now know, the dividends for the first half of 1933 on the guaranteed stocks were only made possible by a temporary recourse to reserves to the extent of £600,000. This amount was recovered during the ensuing half year, but there are no indications at present that there can be anything like such a revival during the current half year as took place in the second half of 1933.

Southern Railway net revenue for the past half-year was some £90,000 better than that for the first half of 1933, but the directors prefer to confine themselves, as they did a year ago, to paying interim dividends at the full rates on the guaranteed preference and preference stocks, postponing any distribution on the preferred ordinary stock until the full results for the year are known. With the help of an appropriation from free reserves the Great Western is again making an interim distribution of $\frac{1}{4}$ per cent. on the consolidated ordinary stock, its net revenue for the past half-year being £370,000 higher than that for the first half of 1933.

It is worth while noting that the only direct benefit so far received by railway stockholders from the improved traffics of the past half-year is the additional £655,000 paid in dividends on two classes of London Midland & Scottish Railway preference stocks. On the other hand the increased traffics have already brought to the railway

staffs additional payments of £600,000 on the L.M.S.R., £450,000 on the L.N.E.R., over £200,000 on the G.W.R., and about £190,000 on the Southern.

* * * *

Agreed Charges

ON July 25 the Railway Rates Tribunal considered and approved twelve further applications made by the railway companies under the Road and Rail Traffic Act, 1933, for permission to introduce agreed charges in respect of the conveyance of traffic on behalf of various traders. The tribunal has now sanctioned over one hundred of these agreed charges for the conveyance of traffic by goods or passenger train and many points of interest have emerged at the various public sittings held by the tribunal at which these applications have been considered. Practically the whole of the negotiations which resulted in the proposal of these specific charges were initiated by the traders and not by the railway companies, a fact which illustrates the growing tendency of manufacturers and traders to offer their goods delivered at flat rates to any part of the country. The majority of the charges so far approved are on a "per package" basis, the commodities concerned being of so diverse a character as butter, suet, lard, tinned fruit, china and earthenware, clothing, brushes, furniture, and plants and shrubs. Those fixed on a "tonnage" basis include provisions, etc., for multiple shops, soap, candles, cooked meats, printing paper, varnish and paint, seeds and fertilisers, tobacco and cigarettes. Included in this first hundred cases are two of an unusual character, that relative to F. W. Woolworth & Co.'s traffic, which is on an *ad valorem* basis, and that applicable to live pig traffic which is fixed on a "per pig" basis and applies to approximately 90 per cent. of the total live pig traffic of the country.

In dealing with these applications, the tribunal has paid a good deal of attention to two main considerations, namely, whether the position could not be met by the quotation of exceptional rates and what effect the introduction of the agreed charge would have on the net revenue of the railway company or companies concerned. The evidence given in regard to the various applications has shown that the object of the negotiations leading up to the fixation of a charge is to give the trader a figure which he requires for the purpose of facilitating his business or to enable him to effect accountancy and clerical economies, in consideration of his undertaking to forward the whole, or an agreed substantial proportion, of his traffic by railway. In every case, however, the agreements specify that the trader concerned is at liberty to utilise the parcels post for the dispatch of his smaller packages if he so desires. While the introduction of these agreed charges has enabled the railway companies to effect some savings in clerical and accountancy costs, it is not always possible to quantify them and, indeed, they will not inure to any appreciable extent until the agreed charge principle becomes applicable to a substantial volume of traffic. Of much greater importance to the railway companies at the moment is the fact that this method of charging secures them additional traffic and eliminates the risk of diversion.

In every case the agreed charge represents as nearly as may be the true average charge or cost per unit of a trader's transport costs for a representative period and any charge agreed is subject to periodical tests for the purpose of ascertaining whether any appreciable variation occurs in the weight or flow of the traffic. This factor alone necessitates a considerable amount of clerical and accountancy operations on the part of the railway companies. Although over one hundred agreed charges have now been approved, and further applications are being lodged at regular intervals, the actual total of applications which have received consideration numbers several hundreds. In many of these it has not been found possible to agree to a charge which will satisfy the trader and at the same time prove remunerative to the railway company, but the vast number of inquiries which are now reaching the companies appears to indicate that prior to the passage of the Road and Rail Traffic Act, 1933, they were under a very real disability as compared with road hauliers.

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The Economic Life of Locomotives

FOLLOWING his report upon locomotive mileage statistics, the results of which were summarised in THE RAILWAY GAZETTE of June 8, Mr. Joseph B. Eastman, Federal Co-ordinator of Transportation in the U.S.A., has made another of his characteristically detailed investigations, this time into the question of the economic life of steam locomotives as governed by the cost of repairs. For the purpose of this study, two new units of comparison were introduced. Instead of comparing the cost of repairs per locomotive-mile, a standard which tells one little when there is a wide disparity between the ages of the engines concerned, the potential-horsepower-unit was used, which was arrived at by multiplying the locomotive mileage by the potential capacity of the boiler to produce horsepower. The boiler horsepower was taken rather than the tractive effort, because, as speed increases, the latter is dependent upon the capacity of the former. To reduce the resulting figure of potential horsepower to manageable dimensions it was divided by 10,000. Secondly, the age-of-use of each locomotive was calculated by multiplying its years in service by its annual mileage and dividing the result by the total mileage made by all the locomotives. On these principles a chart was constructed showing the relation between age-of-use and cost of repairs per horsepower-unit for 65·4 per cent. of the reportable locomotives on the Class I railroads in the U.S.A., based on data collected for the years 1927 to 1929 inclusive. On this chart the repair cost trends of the 0-6-0, 2-8-0, and 4-6-2 types were shown by separate curves. The 2-8-0 revealed the greatest annual increment in this respect with $0·042. The trend of repair costs for some 4,000 locomotives of all types was also indicated and showed an annual increment of $0·0289.

A further chart was drawn to show the economic life of locomotives making from 20,000 to 100,000 miles per annum, based upon the investment in dollars per horsepower-unit. As this last quantity is continuously increasing, there comes a time when the yearly outlay per horsepower-unit exceeds that which operating experience has shown to be justified. Mr. Eastman shows that large locomotives involving considerable investment must, if they are to be used economically, be used intensively. The faster the limit of economic life is reached, by obtaining an annual mileage of from ninety to over one hundred thousand miles, the greater the net return upon the investment. The retention in service of such engines after the expiry of their economic life is justified only by their value in coping with periods of peak demand. Even then, the proposition is not economically sound unless their mileage is run out entirely during such periods, and is not universally applicable. Fuel economy is a further vital factor in determining economic life, and, in comparing that of a superheated locomotive with one using saturated steam, may be of more importance than repair cost at age-of-use. Mr. Eastman again insists that actual age has less effect on economic life than age-of-use. An engine making only some ten to twenty thousand miles a year may well be run economically for forty years or more.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

British Subjects in Overseas Appointments

P.O. Box 2115, Shanghai, China.
June 2

To the Editor of The Railway Gazette

Sir,—In The Railway Gazette of April 27, just to hand, reference is made to "British Participation in Szechuen Railway Construction" relating to an agreement which is understood to have been reached between the Szechuen Rehabilitation Bureau and a British firm to build a railway with funds provided jointly by the two parties.

An important part of the announcement which appeared in the *Chinese Economic Bulletin* is that the Chinese investment represents 51 per cent., being in land, whilst the British investment will consist mostly of machinery and supplies. It looks very much as though a British firm had agreed to place a railway on Chinese land and instead of retaining the controlling interest until redeemed had agreed to surrender it at the outset by allowing the Chinese to treat the land as funds valued at 51 per cent. of a sum arrived at by taking the cost of the railway as being 49 per cent. and a certain amount of land as being 2 per cent. more valuable. Whether these comparative values are to be based on market values of land up in Szechuen—where it is cheaper than in Shanghai!—and the cost of a new railway on the date of the contract is not stated. What is very evident is that the 51 per cent. will have the controlling interest and the 49 per cent. as much power as good will and a remote geographical position will from time to time allow. The security of the investor is not very clearly defined but there seems in the whole transaction the germ of dissatisfaction and trouble for someone in the future.

A board of directors will be organised by both parties but where the power will lie in the exercise of its functions is a point of importance. The 51 per cent. factor will probably have less difficulty in deciding the point than the 49 per cent.

British subjects will hold positions in the engineering and accounting departments—not necessarily as the head of these departments, but anyhow, they will hold positions; and their participation in the management will cease when the railway is redeemed by the Provincial Government. When their participation in the management will commence is not stated nor is it defined to what extent they will be allowed to participate. It is not clear whether their engagements will cease when their participation in the management ceases. Their service contracts will rest, however, upon the fundamental agreement and the security of their appointments will rest not so much upon the service contract as upon the agreement between the joint parties in the enterprise.

If men are induced to relinquish secure positions elsewhere to take up such appointments, the least that can be expected of the British firm sending them there is that they should accept responsibility for the men by treating them as their own employees and protecting their interests.

To begin with, the agreement is between the Szechuen Rehabilitation Bureau and a British firm, but the railway is to be redeemed by the Szechuen Provincial Government; further, it is a joint enterprise between foreign and British interests. Under which law could a British subject seek redress? He could not hope for much unless he could take his case to a British Court, and the British Court would have no jurisdiction over the Chinese part of the undertaking. That is the anomalous position of a British subject when he is called upon to sign a service contract with a board "organised by both parties."

In times of depression an unemployed person might quite well accept an appointment without going too deeply into the security of it, and others desirous of obtaining experience overseas could take a certain amount of risk; their private difficulties or willingness to perform a service do not afford reasons for which they should be exploited.

The more serious aspect of the question is in the case of men who are already employed and who may be led into the belief that the engagement overseas would be advantageous to them. As men of experience they would be more acceptable to the undertaking. It is when such men are induced to relinquish secure posts which they may have held for a number of years, with prospects of normal promotion and—as in the case of many British railwaymen—with superannuation or other retiring benefits, that their lives and careers might be irreparably injured by the acceptance of an invitation to go overseas.

It is incumbent upon any British firm concerned in the transfer of a British subject overseas not to place his career in jeopardy to serve their own interests. To create a situation which places him at a disadvantage at the outset and leave him virtually stranded in time of crisis is a grave injustice against which he should be safeguarded. The safeguard can lie only with the protection of the person within British Law. The question is an important one which requires urgent examination with a view to legislation for the protection of British subjects engaged for service overseas.

Yours faithfully,
GEO. L. TURNER

Truth in Advertising—Summer Tickets

Bordyke, Burgess Hill,
Sussex.
July 21

To the Editor of The Railway Gazette

Sir,—For some time past the railways have been advertising extensively "summer tickets, any time, any day, anywhere." Judging from a personal experience the service is not quite as advertised.

Droitwich is a monopoly of the Great Western Railway; and the brine baths there attract a number of invalids. Among Burgess Hill residents are several elderly folk likely to be attracted to Droitwich Spa for the "cure." Burgess Hill also happens to be on the direct route from and to Brighton over which through Great Western trains run daily to a junction within a few miles of Droitwich.

On applying here to-day for a through return ticket the booking clerk informed me that the Southern Railway did not issue through tickets to the G.W.R., although it did to the L.M.S.R. and L.N.E.R.; that one could be booked only to Reading, and must re-book there to a G.W.R. destination. Why this is he could not explain. What is the function of the Railway Clearing House, which is a considerable item in railway expenses?

I notice the G.W.R. passenger receipts are already down £41,000 this year, although all the other railways register big increases. Possibly part may be traced to an irritating policy contrary to that advertised. Anyway, it is a waste of money to advertise travel facilities which in fact do not exist; moreover the railways will get a bad name in consequence, and bad names stick—to railways in particular.

Yours faithfully,
G. A. NNOKES

[On second thoughts, we think our correspondent will appreciate that it is impracticable to place through fares on the books between every pair of stations in the country, and in fact, through fares have not been put into operation between Burgess Hill and Droitwich owing to the absence of any demand for such facilities. The railway companies advertise that where through fares are not in operation, arrangements will be made for the issue of summer tickets upon prior notice being given at the station concerned, and the alleged remarks of the booking clerk are somewhat misleading as a through fare could have been obtained immediately upon application to his headquarters. No doubt, should it prove that in future the number of inquiries at Burgess Hill justify the introduction of through fares to Droitwich, arrangements will be made for this to be done.—Ed. *R.G.*]

PUBLICATIONS RECEIVED

Road and Rail Traffic Law, 1934.—By Robert P. Mahaffy and Gerald Dodson, Barristers-at-Law. London: Butterworth & Co. (Publishers) Ltd., Bell Yard, Temple Bar. 10 in. by 6½ in. by 1½ in. 319 pp. and General Index (37 pp.). Price 30s. net.—The authors are already well known for their book on the Road Traffic Act, 1930, and their present work links up in a most convenient form the latest road law on the 1930 Act with the developments brought about by the Road and Rail Traffic Act, 1933. In the first part of the book is set up the full text of the Act of 1933, with such explanations or submissions as, at the present time, it is practicable to offer considering that the main provisions of the Act came into force only at the beginning of the present year. The second part, which is really a supplement to the former work on the 1930 Act, summarises the many judicial decisions given upon that Act, and the third part devotes 197 pages to Statutory Rules and Orders, prefaced by an explanatory introduction and a chronological table of such Orders dating from October, 1931, to the end of January, 1934, among the latest being the Railway Rates Tribunal Rules relating to agreed charges. The introduction to the third part and the chronological table form an invaluable guide through the maze of Orders. In the introduction to the book as a whole the general description of the Road and Rail Traffic Act is given concisely and in an interesting style, and supplemented by the text of the Act and the accompanying notes, supplies all that is needful to be known about the measure. There is a full and satisfactory index.

Railway Engines of the World. By Brian Reed. London: Humphrey Milford, Oxford University Press. 159 pp. 8½ in. × 5½ in. 76 half-tone illustrations. 3s. 6d. net.—Notwithstanding the competition of other forms of transport, the aeroplane and the motor-car in particular, the steam locomotive still holds a warm place in the affections, not only of the average boy, but of the grown man as well. Wisely, the railway managements of this country have done much to foster that regard, by the use of gay liveries of colour. the bestowal of names, and attention to locomotive external lines, so that the modern British locomotive is still, to the discerning eye, a thing of beauty as well as of majesty. A book such as the one under review is designed to add still further to the attraction of the subject. Further, as its title indicates, the author has not adopted a parochial outlook by confining his attention to the locomotives of Great Britain, but has gathered his material from all parts of the world; and his collection of illustrations, well reproduced in 48 plates on art paper, is probably the most comprehensive visual review of world locomotive practice, at such a price, and in such a compass, that has yet been published. These illustrations are not confined alone to locomotives, but many of them depict trains, and in some cases are of considerable artistic merit, such as the one of a Japanese express passing the shapely snow-covered cone of Fuji-yama.

In a pleasantly informative way Mr. Reed reviews first of all the locomotives of Britain, and then passes on to the Continent, India, the Far East, the Antipodes, the roof of the world in South America, and so to maximum locomotive development in North America, concluding with electric, diesel, and other rivals to steam. With his locomotive descriptions, the author has packed in a wide variety of general information which gives some diverting reading; but in that information there are several errors of a kind that might be avoided in a later edition. For example, passengers do not normally travel from Paris to Switzerland via Nancy, nor are Est locomotives seen in Basle; Continental dining-cars now in general weigh about 54 tons apiece, not 42 tons; the nightly procession of P.L.M. expresses proceeds on the same metals for almost 200 miles—to Dijon—and not merely 100 miles; Swiss rack-and-pinion railways are by no means confined to lines making mountain ascents, but include several important through routes, partly adhesion, but using the rack over the steeper sections, such as the Brünig, the Fürka-Oberalp, and the Visp-Zermatt; and we can imagine the scandalised astonishment of the authorities at Liverpool Street at the suggestion that the Hook and Antwerp Continental boat express—the pride of the line—leaves the terminus "generally with one or two Continental wagons on the train!" The statement that "France is scarcely a whit behind this country in the number of trains timed at high speed" is very wide of the truth to-day, for our friends across the Channel now have roughly twice the mileage of trains booked from start-to-stop at over 58 m.p.h. that we have in Great Britain.

There are certain other statements that require qualification, or readers may be misled. For example, the assertion that when the Great Western engine *King George V* was in America in 1927 "it gave the Americans a fright because it ran so fast—a beggarly 76 m.p.h." should be qualified by saying that it was not mere speed which frightened the Americans, but the fact that a service speed restriction was being, or likely to be, exceeded. Again, in comparing a four-coupled with an eight-coupled engine the author claims that "at speeds over about 50 m.p.h. the four-coupled engine would be able to pull a greater load, as the eight-coupled uses most of its power in propelling itself." No doubt the Ivatt trials with an early design of 0-8-0 mineral locomotive were in mind, but to show that the statement is now out of date it is only necessary to recall the recent performance of the new L.N.E.R. 2-8-2 *Cock o' the North* in developing over 2,000 horse-power *at the drawbar* at a speed of 60 m.p.h. Further an eight-coupled tank engine, with 5 ft. driving wheels, on the Northern Railway of France, during some tests about a year ago, hauled a load of 474 tons on an up gradient of 1 in 200 at a steady speed of 70 m.p.h.

These, however, are minor blemishes, as are also the author's rather tiresome iteration of superlative adjectives in regard to size, and his progressively more daring excursions into the vernacular which culminate in a chapter headed "The Latest 'Yells' in Steam Engines." It is a mistaken idea, incidentally, that this type of writing will appeal more readily to the boy; on the contrary, the average boy, when he is anxious to learn, prefers to be regarded as a man, and probably considers that an author who sets down his own juvenile argot in cold print does not know much more than he does about the matter in hand. These defects apart, the book is an excellent production; in any future edition, revision of the matters to which we have referred, and the addition of a few more illustrations of the principal locomotive types in Great Britain, which are rather scantily represented, will make it one of the best of the popular locomotive books.

Aluminium Sections and Foundry Paint.—Two new publications have been issued by British Insulated Cables Limited, Prescot, Lancashire. A catalogue of aluminium sections is fully illustrated with line drawings showing dimensions and approximate weights to the foot. A small folder describes the advantages of B.I. foundry paint, a preparation which has been specially devised for the protection of castings from corrosion. It dries in air in ten minutes, leaving a bright, black, glossy coat which is resistant to the weather.

Kenya and Uganda Travel Guide No. 5.—This little book tells the prospective traveller or settler, in a concise but interesting fashion, all he needs to know of "this changing land of infinite variety and lasting appeal"—and at the same time makes it clear that travel and settlement in East Africa to-day can be undertaken in safety and comfort. Special attention is given to the facilities provided by the Kenya and Uganda Railways and Harbours Administration, which is responsible for the publication, many pages being devoted to tabulated lists of the passenger fares from principal stations, steamer call excursions, circular tours, &c. The descriptive matter is well done and copiously illustrated; whilst at the end there is a fine coloured map showing railways and roads with through routes to adjoining territories.

THE SCRAP HEAP

A press report from Tokyo says that the railwaymen of Japan may soon be issued with uniforms and caps of silk. The Japanese Government is anxious to dispose of the large stocks of silk on its hands, and the railway employees may provide a partial solution.

* * *

"Does this train go to Piccadilly?" "Yes; watch where I get off, and you get off one station before."—*From "The Windsor Magazine."*

* * *

While a train was leaving Devonport station bound for Portsmouth on Friday last, a porter raced frantically down the platform. "Hi, missus, here's your baby," he shouted. But the train had to be stopped before he could hand to a forgetful mother the child she had asked him to mind while she bought her ticket.

* * *

The following details of the locomotives used on Canada's first wooden railway, the Quebec & Lake St. John Railway, and those in use on the same section of the Canadian National Railways, make an interesting comparison:—

Q. & L. St. J. R.		C.N.R.
1, 2, 3 ..	Engine numbers ..	4,200–4,209
1870 ..	Date built	1919
4-4-0 ..	Type	2-10-2
14″ × 24″	Cylinders	27″ × 32″
38,000 lb.	Weight, drivers ..	276,000 lb.
89,000 lb.	Total, engine and tender	540,300 lb.
2,000 gal.	Capacity tender ..	8,300 gal.
125 lb. ..	Boiler pressure ..	200 lb.
9,088 lb...	Tractive effort ..	69,600 lb.

* * *

"JIM" OF PADDINGTON DEAD

A famous character at Paddington station is dead. He is "Jim," the porter who has loaded scores of racehorses and thoroughbreds into their boxes, sometimes under trying circumstances. His full name was James Broomfields, and he lived in Lothrop Road, Queen's Park. He was retiring after a long illness, and on Saturday he went to say good-bye to the stationmaster. He handed his rule-book to the staff inspector, Mr. Miles, with the remark that he had learned everything off by heart during his illness, then collapsed and died. "Jim" was 55. He leaves a widow and two daughters. —*From "The Daily Telegraph."*

* * *

WESTERN KENTUCKY'S FIRST RAILROAD

Our American contemporary *Time*, of July 16, mentions that during the previous week, at Fulton, Ky., 10,000 people watched Mrs. John Luther Jones mount to the cabin of a full-size model of the first railroad train to run in Western Kentucky. The line, now a part of the Illinois Central System, had been opened just 80 years before. Mrs. Jones is the widow of "Casey" Jones—so called because he came from Cayce, Ky.—the heroic engine driver of No. 638, who met his death in a head-on collision near Vaughan, Miss., in the early morning of April 30, 1900.

* * *

SEEING THE JUICE COME ON

The idea of electricity being visible to the human eye so that its onset could be observed much in the same way as a train is seen to approach, is one which brings a smile to the face of the orthodox electrical engineer; especially so, when the particular brand of electricity in question is the traction supply used for driving London Transport electric trains. It has been given to many to observe the "corona effect" on high voltage lines, but few expect to see any "corona" from conductor rails, charged with continuous current at 600 volts.

However, the report was heard from many of the London Transport traffic staff, whose sobriety was without question, that they could often tell when certain lines were charged because they "could see the juice come on." This seemed to call for some investigating, and it was found that the evidence was that observers from the platform at King's Cross station, Metropolitan Line, could definitely see when the City (Widened Lines) were charged, in the morning, and in the afternoon, because they could see the electricity "jumping over the insulators."

The probable explanation is that the steam trains using the Clerkenwell tunnels in this section cause sulphurous deposits to form on the insulators, which, combined with dust, serve to form a conducting path, giving rise to sparkling, whenever the lines are charged. Such leakages are probably burned away after 15 or 20 minutes from the time of charging, and the rails remain clear until they are discharged, when the collection and accumulation of dirt begins afresh, ready for a renewed pyrotechnic display when the lines are again charged.—*H.C.S. in "Pennyfare."*

* * *

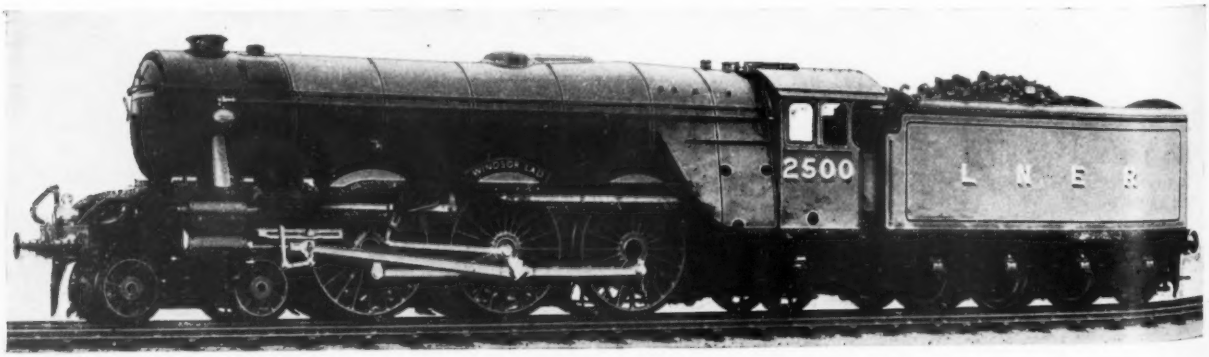
A delightful anecdote about Brunel—a man of cool courage and iron determination—concerns the building of the Clifton suspension bridge over the Avon.

Brunel, who had designed the bridge, went there one day to see how the work of construction was proceeding. It was round about lunch time, and the bridge was deserted save for one Herculean navvy. Brunel wanted to get a bird's eye view of the bridge, but the scaffolding along its sides had been taken away, so that he could not step back over the gorge to survey the work.

Brunel was not a man to be "done." He enlisted the aid of the navvy, who was told to secure a long plank. This was produced, one end of it was thrust out over the gorge, and the navvy was bidden to weight the other end down with his own bulk.

He did so, and then Brunel, with no more concern than he would have shown in walking on a pavement, stepped coolly out to the end of the plank, turned, and, indifferent to the terrifying drop beneath him, surveyed the partly built bridge.

Satisfied at last, he walked back to the bridge, thanked his amazed helper, and walked off, leaving the navvy white and trembling.— *From the "Derby Daily Telegraph."*



L.N.E.R. locomotive No. 2500, "Windsor Lad," named after this year's Derby winner, the first of a new series of Super Pacifics now being built at Doncaster

OVERSEAS RAILWAY AFFAIRS

(*From our special correspondents*)

Latest programme of Indian rolling stock—Important new construction in Brazil—South African Railways and Harbours finances—Distribution of work between various shops in New Zealand—Probable Chinese orders for Britain

INDIA

New Rolling Stock for 1935-36

Details of the rolling stock programme for 1935-36 recently approved by the Standing Finance Committee for Railways are now available. The total provision of Rs. 274·88 lakhs is made up as follows:—

Locomotives	..	Rs. 64·87 lakhs.
Boilers	.. ..	,, 38·47 ,,
Carriages	.. ..	,, 117·95 ,,
Wagons	.. ..	,, 53·59 ,,

It is proposed to purchase 43 new broad gauge locomotives on renewal account, to cost Rs. 32·67 lakhs, inclusive of two diesel electric locomotives costing Rs. 6 lakhs for the North Western Railway, which were included in the programme for the current year but are expected to be delivered and paid for in 1935-36. The Railway Board has now decided to try locomotives of a higher horse power and consequently greater cost than originally contemplated. The programme also includes 29 0-4-2, XT class broad gauge engines (14 for E.I.R. and 15 for N.W.R.) for fast shuttle services on branch lines. The XT class is a special engine designed to haul light trains at high speeds and has proved economical and satisfactory in service. This type of engine will be of great assistance in dealing with road motor competition. In the two 4-6-2, XB class engines proposed for the G.I.P. Railway, improved fittings will be incorporated to facilitate extended running with change of crew. These are being purchased as an experiment in pooling and in the intensive use of locomotives.

A fairly heavy locomotive renewal programme in future years is expected on the B.B. & C.I. Railway and this administration is to be permitted to purchase a diesel shunting engine for experimental purposes.

Provision is made for 44 metre gauge locomotives altogether, estimated to cost Rs. 25·37 lakhs, mostly in replacement of engines that have passed the age limit. The B.B. & C.I. Railway is continuing the manufacture of light type locomotives in its Ajmer workshops. Four narrow gauge locomotives are to be purchased at a cost of Rs. 1·62 lakhs.

The total provision for coaching stock amounts to nearly Rs. 118 lakhs, out of which about Rs. 9 lakhs represent expenditure on additions, mostly on the South Indian Railway to meet the new traffic demands resulting from the development of the Cochin Harbour. The provision for general service wagons is still under consideration and will be placed before the committee at a later meeting when the Railway Board's examination of the subject is complete. The programme now submitted and approved is limited to departmental and special non-pooled types of broad gauge wagon and metre gauge goods stock. It is proposed to purchase 290 broad gauge wagons, other than pooled stock, estimated to cost Rs. 20·29 lakhs, and 915 metre gauge wagons at an estimated cost of Rs. 33 lakhs.

Karachi-Bombay Railway Connection

The special officer deputed by the Railway Board to survey the projected railway connection between Karachi and Bombay has submitted his report and this is now under consideration by the Government. It is believed that the scheme is estimated to cost about Rs. 5 crores on which a return of 2 per cent. may be expected. Apart from the inadequacy of the yield, other important considerations affecting the construction have to be carefully weighed before it is finally sanctioned. In the first place there is already a cheap sea route of long standing, which will be seriously hit if traffic is diverted to the proposed railway route, but against this must be balanced the fillip to industry and the employment of labour that the new construction will afford.

Traffic experts are reported to view the scheme with favour on the grounds that the sum total of the existing traffic by land and sea and the potential traffic incidental upon the increased production in the Sukkur Barrage area will eventually make the line remunerative. Similar views are held by the Karachi Indian Merchants' Association and the Buyers' and Shippers' Chamber. These bodies estimate that the 100 or more textile mills in Gujerat with 23,50,000 spindles and 53,000 looms consume annually about 6 million bales of cotton, of which Sind will be the nearest source of supply. Moreover, 18 crores of yards of Indian textiles are imported into Karachi by sea every year. There is also a very large traffic in various fruits from Chaman and Quetta to Bombay via Delhi involving about 70 hours of transit. The new route will reduce the journey by at least 20 hours and the lower freight and less wastage may lead to a considerable increase in this fruit traffic. With favourable railway freights the salt traffic from southern Sind may be developed. Finally, with money, materials and labour all cheap, the time is particularly opportune for launching the project.

Indian Standard Wagon Company

The audited accounts of this company for the year ended March 31, 1934, show a profit, after allowing for depreciation, of Rs. 2,68,520. It is proposed to pay a dividend of 7½ per cent. on ordinary shares, which actually represents a return of 1⅞ per cent. to the original subscribers of the ordinary capital. Throughout the year, the works were on restricted output. Orders for 687 "O" type and 300 "CR" type wagons have been received for delivery during the current year. Again, the works will be on reduced output, but it is hoped that the results for the year will not be unsatisfactory. All plant and machinery have been maintained in good order and the works are in a position to take advantage of any revival in trade. It is, however, anticipated that some new machinery may have to be purchased to provide for obsolescence of plant.

BRAZIL

Extension of Santa Barbara Branch, Central Railway of Brazil

This line, when completed, will link up Bello Horizonte and Victoria, the capitals of the States of Minas Geraes and Espirito Santo respectively, and will serve the exceedingly fertile zone bordering the Rio Doce. Its construction is being carried out slowly but surely, 19 km. of track, out of the total of 94 km., now having been laid. Work was begun as long ago as 1926 (after the original survey had been made in 1922), but comparatively little progress took place until 1930-31, when practically the whole of the road bed was completed. After some further delay, construction was restarted in March, 1932, and now the only works remaining are the completion of the bridges at Funil, Santa Barbara, and Rio do Peixe, and four viaducts at Monlevade and between kms. 55 and 60. This new link will be of considerable commercial value, as it will not only connect two of the principal cities of the interior, but will also provide an outlet for the products of a rich and progressive area to the port of Victoria.

The Complete Derailment of an Express

What might have been a very serious accident occurred to the day express between Rio and Bello Horizonte about 6.20 p.m. on June 27, between João Ribeiro and Arrojado Lisbôa

stations. As a result of the breaking of an axle on the rear bogie of the tender, the whole of the train became derailed, the two vehicles that suffered most damage being the leading van and a second-class coach. The former was smashed to atoms and the latter fell down an embankment which borders the river Paraopeba at this point; the first-class coaches and the restaurant-car left the rails but luckily were damaged only slightly. Mercifully, too, only a few cases of injury among passengers and staff were reported, none of them being serious. It was particularly fortunate that the train conductor and his assistant, who normally ride in the leading van, happened to be in the rear portion of the train at the time of the accident. Traffic was temporarily diverted via Lafayette—44 km. in the rear of the derailment—and via the narrow-gauge line through Burnier, Itabira and Sabará, though transhipment at the site of the accident was also carried out.

NEW ZEALAND

Heavy Workshops Programme

The following general programme of rolling-stock construction is in hand at the four main railway workshops, and it is expected that most of the work will be completed before the end of the current financial year:—

Otahuhu (Auckland) Workshops.—A total of 22 second class main line cars are under construction. Ten of these have already been put into traffic. Fifteen suburban cars are also being built, and five of these were to have been turned out in July, and the balance will be ready by November of this year. There are also under construction five 30-ft. vans, six double-bogie frozen-meat wagons, 50 four-wheeled insulated vans, and 35 sheep wagons.

Addington (Canterbury) Workshops.—These shops will shortly complete the construction of five cars, 42 four-wheeled and 20 double-bogie sheep wagons, and ten box wagons for perishables. A further 60 four-wheeled sheep wagons and eight large goods vans will also be constructed during the year.

Hutt Valley (Wellington) Workshops.—Here, besides an extensive programme of locomotive construction, there is much new work in the supply of all castings (brass, iron, and steel) required for the Otahuhu Workshops, and considerable manufacture of other metal work required in the general programme of locomotive and rolling-stock improvement.

Hillside (Dunedin) Workshops.—These workshops will be occupied during the year with the ordinary programme of locomotive repairs supplemented by additional assembly and repair work due to the transfer of a number of locomotives from the North to the South Island as a result of the construction and placing in traffic in the North Island of the new "K" class engines. As the casting production shop for the South Island, Hillside will also participate in the building programme at Addington.

There are 3,100 men employed in the four main N.Z. Railway workshops. At Otahuhu the staff numbers 900. The workshops there deal mainly with car and wagon building and heavy repair work. At Hutt locomotive and metal-working shops there are 1,000 hands. The Addington workshops, with a staff of 600, do for the South Island what the Otahuhu workshops do for the North Island, and the Hillside workshops, where 600 men are employed, correspond to the Hutt workshops.

Hotel Bookings for Trains

As an aid to travellers in arranging the most suitable reservations of sleepers or seats on trains, the New Zealand Government Railways have just introduced a compact booklet of sleeping car and day car accommodation plans for use in the offices of hotels. From this booklet, intending train travellers may indicate the part of any train they would like to have reserved for their use, and the hotel office then makes the necessary reservation by telephone with the station reservation office. Should any desired position be already reserved, the applicant can make his choice from the remaining vacancies.

SOUTH AFRICA

Financial Position

The final accounts for the financial year ended March 31, 1934, have now been published and they reveal the following position:—Railway earnings (transportation services only), £23,707,524; increase compared with 1932-33, £3,087,646; railway working expenditure, £16,919,520; increase compared with 1932-33, £1,328,466.

After meeting all expenditure on working and under net revenue account but excluding contributions to certain funds representing an amount of £337,000, railways returned, during the financial year, a surplus of £1,813,505, harbours £46,823 and steamships £4,007; and airways a deficit of £3,528. Taking into account the contributions referred to, as well as the deficit of £3,692,076 at March 31, 1933, the final result of working the railways, harbours, steamships, and airways at the end of the past financial year was an accumulated deficit of £2,168,269. Since the beginning of the current financial year railway revenue has shown a considerable increase over last year, the total to the date of writing (July 7) from April, 1934, amounting to £6,800,285 compared with £5,954,902 for the corresponding period of last year.

THE FAR EAST

British Orders for Rolling Stock

The Nanking Government has given instructions for the purchase in England of fourteen locomotives and 170 40-ton steel bogie freight cars to be paid for out of the British returned Boxer indemnity money. Tenders will be called for by the Chinese Government Purchasing Commission in London.

Changes in Employment in China

The total number of railway employees in China in 1931 was approximately 85,000. The figure for 1933 fell to approximately 81,000. Foreigners have been eliminated to a large extent during the past few years and comparatively few now remain in the railway service.

Chinese Eastern Railway

A further deadlock appears to have occurred in that the proposal of Mr. Hirota, the Japanese Foreign Minister, regarding the transfer of the line to Manchukuo is unacceptable to the Soviet. Counter proposals by the U.S.S.R. were also rejected and Mr. Hirota eventually intimated that he was no longer willing to act as intermediary between Manchukuo and the Soviet.

Anniversary of the Initiation of the Canton-Hankow Railway

The twenty-seventh anniversary of the commencement of work on the Canton-Hankow railway was celebrated on June 8 in Canton. Government, railway, and party representatives were present at the ceremony.

Canton-Kowloon Revised Agreement

Hong Kong messages indicate that British and Chinese interests have reached a revised agreement regarding the division of the Canton-Kowloon Railway receipts between their respective sections of that line. It is understood that the Chinese section will receive 72 per cent. in future, instead of 65 per cent. as in the past, reducing the British percentage to 28.

Three New Southern Railway Posters

Our glorious South Coast offers many facilities for sun-bathing at this period of the year, and one is pleasantly reminded of the fact by the appearance, at various Southern Railway station hoardings, of a large and finely-coloured poster, which is sure to appeal to the family instinct of the average holiday-maker; it is well done and the grouping is excellent. In a smaller poster, the aforesaid holiday-maker is cleverly enjoined to leave his "shadow" behind him and "go Southern for sunshine." A third very good bill, also issued from Waterloo, and showing a group of elephants, punningly advises the forwarding of "trunks in advance," at 2s. per package.

NEW RAIL CREEP ADJUSTER

This machine will fit any size of rail and will push or pull up to 15 45-ft., 95-lb. rails, even on a curve

THE old and in many places still usual method of correcting creep with a crowbar is admittedly crude and slow, and any improvement upon it is worthy of the permanent way engineer's consideration. For the device now described several advantages are claimed, among them being the fact that the load is applied centrally to the rail so that there is no tendency for the rail to bend or spring, and this enables heavy loads to be applied with the machine without fear of jamming or damaging the rail or chairs. But even more significant is the facility with which long lengths of rail can be either pushed or pulled, the former being a particularly useful function. More exact adjustment and smooth application of the push or pull is also effected, the machine being practically an instrument of precision, though also one of great strength.

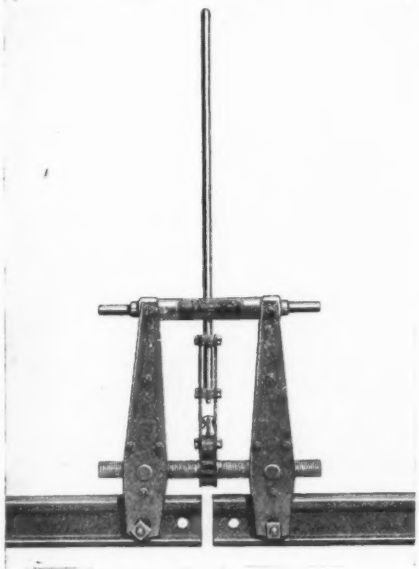


Fig. 1 (*left*): *The machine fixed ready to push back or pull forward one or other rail*

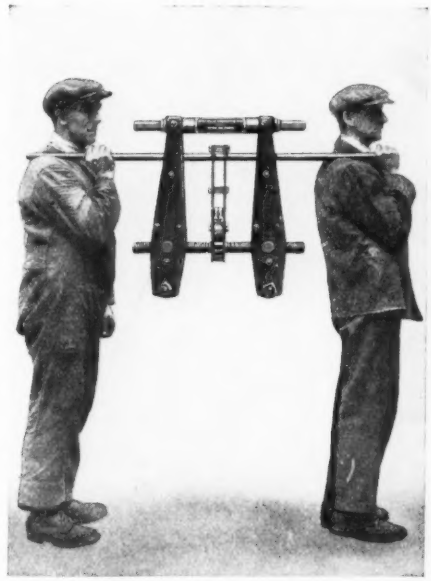


Fig. 3 (*right*): *The adjuster being carried by its lever bar*

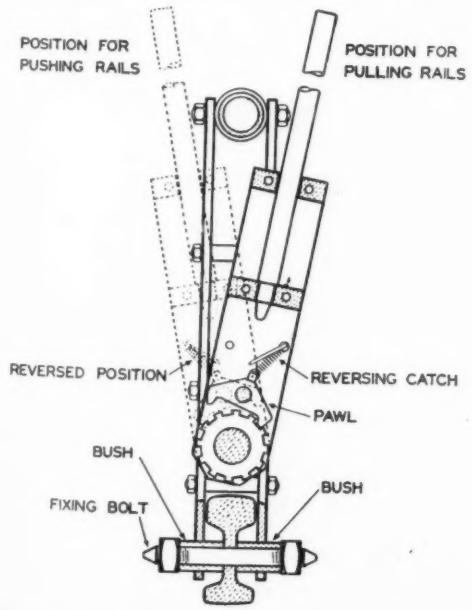


Fig. 2—*Section through adjuster, showing manner of fixing to rail*

The creep adjuster, as may be seen from our illustrations, is primarily a horizontal jacking device having a right and left hand screw, operated with a ratchet and lever and instantly reversible from push to pull or *vice versa*, by turning over the pawl spring or reversing catch, to be seen in Fig. 2. The act of pushing over the spring reverses the pawl so that the rotation of the screw relative to the handle is reversed. Handles are provided at the ends of the top member for holding up while fixing. The operating lever is detachable for carrying purposes and is passed through the machine parallel to the screw ; two men can thus carry the equipment easily on their shoulders as illustrated in Fig. 3.

The adjuster is easily and rapidly attached to the rails by two fixing bolts which take the place of fishbolts. The fixing bolts, made of heat-treated nickel chrome steel, pass through hardened steel bushes fitting in the side plates. The machine will fit any size of rail, whether bull-headed or flat-footed, without alteration. The standard machine is supplied with one-inch fixing bolts to suit the larger rail sizes, but if it is to be used on rails having fish bolts less than one inch diameter, all that is necessary is to change the fixing bolts and their bushes, a matter of a few seconds. The bushes are slipped into the holes in the side plates and the double-ended bolt is passed

through them and through the fishbolt hole in the rail; the nuts are then tightened up.

Method of Operation

Generally speaking, in any length of track requiring adjustment there are tight joints at one end and open joints at the other, see Fig. 4. A convenient way of dealing with, say, ¼ mile of this is to set up the appliance at some point midway. The keys in the length of rails on the wide joint side of this are then knocked out and the fishbolts are slacked. Gauge pieces are inserted and the machine is operated in a pushing manner which closes all the wide joints up to standard in a minute or so. This half of the quarter mile having been dealt with, the rails can be keyed up and the fishbolts tightened. There will then be a gap between rail ends immediately under the machine. The keys are now removed from the tight joint length of track, but the fishbolts are not slackened. The ganger goes to the furthermost tight joint from the machine, slacks two of the bolts and signals to the man at the machine to pull ; when the gap is correct he stops the man at the machine, tightens up the fishbolts and proceeds to the next joint where a similar procedure is gone through. The necessary keying up of this part of the adjusted length of rail follows behind the ganger.

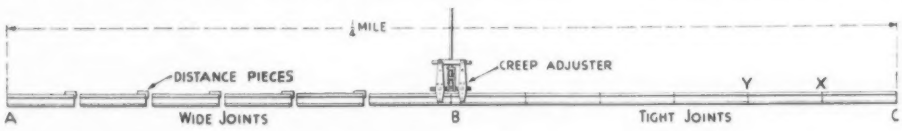


Fig. 4—Diagram showing method of operation with special distance pieces prior to respacing joints over a quarter of a mile

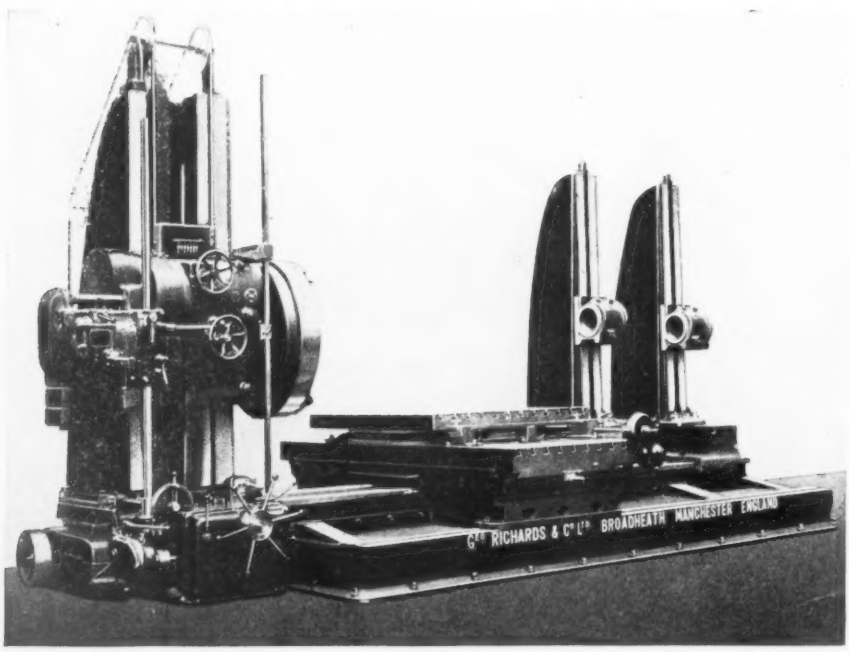
Spare Parts and Special Gauge Pieces

All parts of this machine are made to jigs so that correctly fitting spares can be supplied at any time, as can also special gauge pieces for use with it. These are so designed that they can be removed easily from the joints after the rails have been pushed up to them. The machine is provisionally protected and is constructed by the Hydraulic Engineering Co. Ltd., of Chester.

NEW PEARN-RICHARDS SURFACING AND BORING MACHINE

WE illustrate below a No. 6 Pearn-Richards surfacing and boring machine of enlarged capacity recently built by George Richards & Co. Ltd., Broadheath, near Manchester. This machine is of the standard type, that is, without traversing spindle, and is provided with several special features. The bed is 4 ft. longer than standard length and the upright 1 ft. higher than standard, and it will be observed that two boring stays are provided. The maximum distance between the boring bar socket on facing head and the outer stay is 16 ft., and the additional stay was fitted to avoid any possibility of deflection when using long boring bars. The centre of the spindle will adjust to 6 ft. 6 in. above the top or revolving table, whilst the cross traverse of the main table is 9 ft. 5 in.

The main table is 11 ft. long by 5 ft. wide, and the top or revolving table is 6 ft. square. The latter has a worm and wheel arrangement by which the table can be revolved by hand or power. The drive for the power movement is taken from the rapid power traverse motion incorporated in the machine and operated by a lever at the right-hand side of the table. The standard lifting arrangement to the revolving table is also provided and operated from the front of the main table. A patent squaring lock to the table is also incorporated, and this ensures perfect squareness between all four sides of the work. The machine is fitted with a screw cutting attachment for cutting all standard threads from 2 to 16 to the inch. In addition, a special feed motion is applied to the saddle by means of which threads of 1 in., 1½ in. and 2 in. pitch may also be cut.



Rules and verniers are fitted to the spindle frame and boring stays also to the cross traverse to the table, and by means of these adjustments to within 0·001 in. are rapidly made. Magnifying glasses are also provided to facilitate the reading of the vernier. The two boring stays have power movement along the bed, which can be engaged or disengaged by levers on the side of the stay block. The stay blocks or saddles are of exactly the same height as the main table; thus, in the event of the stays not being required, these saddles can be utilised for supporting long or overhanging work mounted on the main table. All the controls are centralised in a convenient position for the operator and, by interlocking, any possibility of conflicting motions being engaged simultaneously is prevented. The machine is of massive proportions throughout and capable of heavy duty.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Ticket Interavailability

IT is good to hear from the Great Western Railway that as a result of its associations with ten omnibus and coach companies, interavailability of rail and road tickets has now been brought into force at 300 places on the company's system. What is even more important than the mere number of points is that the arrangements apply to long-distance as well as short-distance traffic and affect holiday-makers travelling to the principal resorts in the West of England as well as passengers passing between inland towns. There are difficulties in the way of making arrangements for interavailability, but the widespread nature of the facilities announced by the G.W.R. leads to the hope that the time is approaching when they will become general.

In the latest announcement issued by the G.W.R. it is pointed out that, while there are three main types of this phase of road and rail co-ordination, the bulk of the demand for interavailability relates to the use of cheap day rail tickets on the road, or *vice versa*, principally in connection with short journeys. Tickets between Oxford and Reading, for example, are available between the G.W.R. and the City of Oxford and Thames Valley Companies' motor services. The extension of these arrangements is being put into operation from time to time when fares allow of it being done without a supplementary amount being charged for the facility, so that the combined services of both forms of transport are made available to the public without further charge. The second type of interavailability is that in which part of the journey is done by rail and part by road, one example being by rail to Haverfordwest, and thence by road to St. Davids. An extension this summer, in the shape of a road service from Par, enables Fowey, St. Austell, and other Cornish places to have a connecting link with the Cornish Riviera Express. The third type of interavailability is that of road on rail in connection with long distance journeys and by which passengers who have travelled to the West of England by road are enabled to return by rail.

Yet one more instance of the benefit accruing to the public from co-ordination is that passengers travelling from High Wycombe and places to Maidenhead by the Thames Valley Traction Company's services run on Sundays only during the summer to Southsea may return by rail any day or time up to three months from the date of the outward journey. The G.W.R. is to be congratulated on the way it is pushing on with the extension of these facilities.

Road Co-ordination

PASSING from the subject of the interavailability of tickets as between rail and road one turns to the progress which is being achieved in the direction of co-ordinating the road services among themselves. Apart from the London Passenger Transport Board which, of course, is unique in many ways, the outstanding example of co-ordination in recent times is that which has come to be known as the Cheltenham scheme and embraces the long distance services of Black & White Motorways Limited, the Birmingham & Midland Motor Omnibus Co. Ltd., Red & White Services Limited, the Royal Blue Automobile Services of Elliott Bros. (Bournemouth) Ltd., Greyhound Motors Limited, and the United Counties Omnibus Co. Ltd. It naturally involves the railway companies with which certain of these concerns are associated, namely, the G.W.R. and L.M.S.R. Obviously the work of co-relating all the services of the different companies must have meant a tremendous amount of work for those concerned, but now that it is practically complete its value can be seen in the way in which superfluous services have been cut out, others deviated to tap new areas or provide useful linkages, and arrangements made to enable passengers to travel by alternative routes. The basis of the scheme is to concentrate on the Black & White station

In this view is seen a batch of the Cob tractor-trailer combinations leaving the works of Karrier Motors Limited for railway service. The twelve on the right are now at work at Southern Railway depots, while the others are being operated by the L.M.S.R.

at Cheltenham the majority of coach services passing from London to South Wales or from the Midlands to the south coast and West of England, and this has applied in most cases since July 1, although the South Wales routes were adjusted earlier. Although the focal point of the scheme is Cheltenham it does not affect only those services which pass through that town, but also the other services of the associated proprietors providing alternative facilities between extreme points of the system, for example, London to Aberystwyth via Worcester, or Bournemouth to Birmingham via Oxford. The licensing system has not made the development of the idea an easy matter, but the formation of Associated Motorways as a partnership between the six owning companies, to hold all the licences of the co-ordinated services, and manage the business, has facilitated matters considerably. The Associated Motorways committee which is in charge of the scheme has made excellent progress so far and in the course of the next few months the travelling facilities should become really comprehensive.

Modern Cartage

THERE is one advantage of the mechanisation of the cartage equipment of the railway companies that is not immediately apparent, but is none the less of great value. We refer to its mobility, not so much in the sense of the carrying out of the normal duties of each depôt but rather in the way in which vehicles which are not immediately required at one place can be transferred to another where they can be profitably employed. An instance of this was seen at Ipswich recently on the occasion of the Royal Show, where the well-organised cartage service of the Southern Area, L.N.E.R., was able to carry out the transport of the huge quantity of animals and machinery to and from the Showground as though it was " all in the day's work " and not in any way an exceptional undertaking. Incidentally, the mobile cranes which have been so much used by this railway were able to do most effective work in handling the heavy cases of machinery. We learn that this summer has witnessed a considerable increase in the use being made by travellers of the " Luggage in Advance " scheme, showing that the facilities provided are being appreciated more than ever now that the organisation of special road motor teams for this work has provided a wider range of collection and delivery. At Liverpool Street station the L.N.E.R. has been dealing with as many as 7,000 packages in a day and 6,000 at King's Cross, and the growth of the scheme has called for a fleet of lorries to be specially engaged on transferring the luggage from one terminal to another each evening.

Co-ordination in France

FURTHER agreements for the co-ordination of rail and road traffic, in accordance with the decree of April 19, are now being negotiated in various parts of France. M. Raoul Dautry, General Manager of the State Railways, who promoted the agreement in the Rouen-Havre area, lately outlined a co-ordination plan for the Charente-Inférieure and Deux-Sèvres departments in an address to 150 motor transport representatives at La Rochelle. The Nord has concluded a pact with road transport interests for the Beauvais district, and it is also stated that an agreement has been reached on co-ordination in the Calais-Dunkerque area.

The P.L.M. Railway is taking steps to co-ordinate rail and road traffic in eight departments of the Lyons region. M. Mugniot, General Manager of the P.L.M., explained the important points of the plan at a meeting in Paris. He said that regional schemes to be effective must include the long-distance motor interests. Time should be allowed to these interests for the disposal of their equipment, if it could not be employed on short or medium distance services. There would be no objection to retaining the long-distance services in cases where it could be proved that the railway was technically not in a position to give a satisfactory service, but, in general, the long-distance traffic must revert to the railway, a principle with which M. Musnier, President of the Fédération Nationale des Transports de France, expressed his agreement.

M. Mugniot gave some details of the P.L.M. plan at a meeting of the Office des Transports at Bourg. He said that the plan involved the closing of 354 miles of line to all traffic and the suspension of passenger traffic on 1,425 miles. The company, he added, had more than 6,250 miles of line in operation, and a large proportion consisted of main line. The company considered that for lines where the amount of traffic was small, the automobile responded to transport requirements better, and in a more economical fashion than the railway. On the other lines maintained in service, the company intended to close to passenger service all establishments (presumably stations) with small traffic, which are needlessly costly, and to leave the service to road motors. All trains would thus become semi-direct and faster. By a more general use of railcars, the service of the principal centres would be improved. The company was also conducting negotiations in the Marseilles area for a co-ordination plan, and a sub-committee was working out the details. The co-ordination of railway and waterways transport was also the subject of negotiations between the P.L.M. and the three principal road transport companies operating in the Rhône Valley.

New Ideas in Demonstration Vehicles

Those whose duty it is to investigate the merits of various commercial vehicles know that it is sometimes not the most comfortable of occupations, especially when a typical load has to be carried. This has been realised by Leyland Motors Limited, who have evolved a special design of cab which can be fitted to the standard chassis for testing purposes. It is larger, of course, than the standard type and it is divided into two portions by a narrow table with folding leaves extending the full width of the cab behind the driver, in the position usually occupied by the back framework of the cab. To the rear of this is a well upholstered seat sufficiently wide to accommodate three people in comfort, who with the table in front of them can make notes and study specifications, &c. Those who wish to watch the performance of the vehicle can therefore do so in comfort and be in a position to discuss technical matters with the driver without leaving the vehicle.

Oil-Engined Lorries in Australia

In the July issue of the *Armstrong-Saurer Bulletin* there is an interesting account of the work in the Kalgoorlie goldfields of the first Armstrong-Saurer Active lorry which was delivered to North Kalgurli (1912) Limited four months ago. A second Active has now been delivered to the same firm and we understand that they are the first diesel-engined lorries to be put into active work in Australia. The average ton-mileage per vehicle is approximately 7,000 per day, the loads consisting of gold ore and quartz from the minehead to the crushing plant, each vehicle having to transport 160 tons a day. The temperature gets as high as 120 degrees in the shade, but the Armstrong-Saurer lubricating oil cooler and the increased capacity of the special radiator fitted to the first Active have proved ample to prevent overheating or loss of water. The only difference between the first and second vehicles is that the latter is fitted with a hydraulic end tipping body, instead of a three-way tipper.

Road Motor Services in South Africa

Developments are here recorded in the extension of both passenger and goods services and also in the production of a new type of vehicle for mule or motor haulage

THE latest returns available in connection with the road motor services run by the South African Railways and Harbours Administration show a steady improvement in the state of affairs. The figures are for April last and they show that the vehicle miles continue to mount up and that while the revenue is going up the expenditure compares favourably. The vehicles ran 419,955 miles in April, as compared with 357,885 miles in April of last year, and they earned £36,667, as against £30,709, while the month's expenditure was £31,460, as compared with £28,695. The revenue per vehicle mile was therefore 21·0d. as against 20·6d. while the expenditure on the same basis was 18·0d. instead of 19·2d. Goods and cream were mainly responsible for the increase, the tonnage being 23,622, an increase of 7,417 tons over the April, 1933, total, while the gallonage of cream for April was 92,575, an increase of 13,643 gallons. New records in these traffics are almost a monthly occurrence in these times.

It is disappointing to see that the number of passengers shows a decline, although at 182,467 for the month the total is only 123 less than that of a year previously. At the end of June the open route mileage of the road motor services was 10,517. Changes during June included the introduction of a service over the 32 miles between Grahamstown and Glen Ovis and another between Bremersdorp and Balegane, a distance of 42 miles and serving an area which carries a native population of approximately 13,000 and is stocked with from 40,000 to 50,000 head of cattle. In order to serve a number of farmers who are resident a considerable distance from the route between Kimberley and Griquatown, a deviation was provided between Campbell and Vanderschyf, a distance of 22 miles.

The opening of the new service from Bremersdorp is a reminder that in the last ten years the road motor services have made a great difference to travelling in Swaziland. Dwellers there were more or less isolated, but in 1928 the motor services were started by the South African Railways and Harbours Administration in the territory which is now linked up with the Transvaal and thereby with all parts of the Union, while the Portuguese authorities operate a service connecting Swaziland with Portuguese East Africa. In those days, it is pointed out in an article in the July issue of the *South African Railways and Harbours Magazine*, the cross-country traveller either had to hire his own cart at a cost of from 50s. to 80s. a day or trust to the mail carts, which charged about 6d. a mile and had no passenger accommodation. To-day the passenger fare on the

One of the Thornycroft six-wheelers with a mixed load of goods just about to cross a stream

Another type of load handled by the S.A.R. Road Motor Services; a complement of bales of wool

The new type of vehicle introduced by the South African Railways. It can be drawn by horses or mules, or by changing the front gear, by a tractor

S.A.R. services is 3d. a mile, with a luggage allowance of 25 lb., any excess being charged at a small rate. The article concludes:—

"There are now services between all the more important centres in Swaziland with provision for white and native passengers and general goods traffic, and there is now no doubt as to whether mails will reach their destination safely. Where there are no post offices the motor bus with its post box serves as a post office. Private bags containing mail to be despatched are hung up at some convenient spot on the bus route ready to be picked up by the bus driver, and those who are very impatient or very anxious, await the arrival of the bus to collect the mail bag. In the same way goods to be despatched or delivered are loaded or off-loaded at the farm gates. Where the quantity of traffic justifies it, special trips are made to points off the recognised routes, so that in reality the motor services have brought the railways to the farmer's door."

The continued increase in the amount of cream transported indicates the success of the arrangements made to encourage that traffic and enable farmers situated hundreds of miles from the nearest rail head to get their cream to the towns and creameries in good condition. The heat and the question of contamination were serious difficulties, and where the quantities were small the body of the vehicle used has been divided into two sections, one for the cream and the other for general goods, the former being specially ventilated. For areas where large quantities of cream are produced, bus bodies have been designed with the object of protecting the cream against any deterioration in transit. The vehicles have a thick floor covered with galvanised iron which can be washed out easily and the lower sides of the body are also covered with sheet iron, the upper portion being screened and covered with sacking. The body is shelved across the centre to facilitate ventilation and to prevent the cans bumping against each other during the journey. At each end of the body louvres are provided to allow of a through current of air.

Small quantities of cream are handled all over the Union, but Bechuanaland and the Northern Transvaal are the two most important cream producing areas. In the former a network of services links the farmers around Kuruman, Molopo River, Kalahari, Maribogo with the creameries at Vriburg and Kimberley, keeping ten of the special vehicles busy. From the Northern Transvaal the cream is conveyed to creameries at Pietersburg and Pretoria.

Incidentally the aggregate amount of cream conveyed by the road motor services has grown from 94,735 gallons in 1925-26 to 979,960 gallons in 1932-33.

Another interesting development in vehicles is seen in the extending use of a smaller type of trailer than was formerly considered suitable for such work. It may be recalled that in THE RAILWAY GAZETTE of July 20 it was announced that the South African Railways had ordered from Ransomes, Sims & Jefferies Limited a large number of welded frame trailers, many of them being for two ton loads. For some time the Administration has been experimenting in that direction in order to obtain a satisfactory vehicle which could be used to supplement the normal 5-tonners.

One of the passenger vehicles used on the S.A.R. Road Motor Services, at a railway station. This bus is also mounted on a Thornycroft chassis

The new design of trailer—it has been christened the Tiny—was evolved by the technical staff of the General Manager's office, and, with the exception of the tyres, ball bearings, and other proprietary components, a number of them have been constructed in South Africa. The tare of the vehicle is 3,500 lb., a saving of 545 lb. having been effected by welding all joints.

One of our illustrations shows a vehicle introduced by the railway in Johannesburg which can be drawn by a team of mules or, when the disselboom has been replaced by a drawbar attachment, by a tractor. One object of the vehicle is to secure the reduction of traffic noise, while the goods are also less liable to damage through the easier riding provided by the pneumatic tyres.

An Observation Coach for South America

Locally-built body on lines more usual in America than in England, mounted on a Thornycroft chassis, for regular daily service over Brazilian mountains

In the accompanying illustration is seen one of two 32-seater coaches—a repeat order—placed in service by the Sao Paulo railway and used by it in regular daily services between Sao Paulo and Santos. The distance run is between 70 and 80 miles but the route is a particularly severe one as the road rises at one point well above 2,000 ft. above sea level. The coachwork, designed in a style which has been more favoured in the United States than in this country, was constructed in the railway workshops and it is mounted on the type of Thornycroft chassis known as the Charger, which is specially suitable for single-deck coachwork and is so used, for example, by the Egyptian General Omnibus Company as well as other overseas operators.

The new coaches put into service by the Sao Paulo Railway Company between Sao Paulo and Santos, on a road which rises to over 2,000 ft.

This Thornycroft chassis has a pressed steel frame of deep channel section which, with the tubular cross-members, makes a rigid structure admirably suited for such work, giving a low load line through the side members being downswept over both axles and with the low rear extensions for the back entrance. Power is provided by the 99 h.p. six cylinder engine, designated AC6, with a capacity of 474 cu. in. (7,759 c.c.) and it, with the gearbox bolted to it to form a single unit, are mounted in the frame at three points, so eliminating stresses that otherwise might arise from any frame distortion. The rigid idea is further carried out in the monobloc construction of the engine, which is fitted with special wet cast iron liners in the cylinders. The valves are overhead, operated by pushrods and rockers from the single camshaft in the crankcase. All the mechanism can be easily reached for adjustment on the removal of covers while the head is easily detachable for decarbonisation or grinding in the valves. The bottom half of the crankcase can also be removed without difficulty for the inspection and taking-up of the main and big-end bearings.

The smooth running of the engine is assisted by the care with which the nickel-chrome crankshaft is dynamically and statically balanced. There is also an efficient vibration damper fitted to maintain smooth running over the whole speed range, while the fact that the crankshaft is carried in seven white-metal lined bearings also lends its aid.

The transmission includes a large diameter single plate dry clutch with fabric surfaces, while the gearbox provides four forward speeds and a reverse, the top gear being a direct drive with the other ratios at 1·52 to 1, 2·40 to 1, and 4·48 to 1; the reduction in the back axle being $5\frac{2}{3}$ to 1. From the gearbox the drive is taken by a hollow propeller shaft, with a fabric coupling at the front end and mounted at the other end in a ball bearing flexibly connected to one of the frame cross-members. From there another hollow shaft, with enclosed, metallic, universal couplings, transmits the power to the off-set, under-type worm which drives the rear axle, a steel casting with hollow semi-floating shafts.

Brakes are on all four wheels, the foot brake operation being assisted by a vacuum servo. The road springs are long and their mountings include the Thornycroft relieving plate, which enables the holding down bolts to withstand the stresses due to the flexing of the springs, the bolts being inclined to one another with special ears provided on the eye-plate to grip the spring saddle or spring box. The standard chassis is fitted with 36 in. by 7 in. tyres, single in front and twins on the rear wheels. The chassis weight, with full petrol tank and equipment (except spare wheel and carrier), is quoted as 3 tons 17 qr.

Facilitating loading operations on German State Railway vans. At the suggestion of the Chief Surveyor at the Central Railway Office in Munich, Mr. Wolffram, the Demag A.G. in Duisburg, has produced what is termed the load swing for fitting at the rear of lorries to facilitate loading and off-loading operations. It is a swinging frame which normally fits flush with the framework of the lorry and it has a hook which can be raised or lowered by means of a winch at the side of the vehicle. When the load has been raised clear from the ground it can be swung into the van and lowered into position, or vice versa. The movement of the swinging frame is rendered easy by means of counter-balancing springs at each side. Any vehicle fitted with this device is available for breakdown purposes as the disabled vehicle can be hoisted by the lifting tackle and towed to the works

Road Transport News and Comments

HANDLING MILK IN THE U.S.A.—According to a Reuters trade message the New York Central Railroad has introduced a new type of milk-hauling equipment in the effort to win back to the railway some of the volume of business that has been lost to road operators in recent years. The equipment consists of two truck trailers carrying refrigerated tanks of 2,050-gallon capacity each and mounted on turntables on ordinary flat cars. By means of this turntable, the trailers can be brought into a position permitting them to be attached to a waiting truck on arrival at their destination. It is stated that the pre-cooled milk can be kept at the same temperature for 100 hours in the refrigerated tanks.

ROAD AND RAIL IN NEW ZEALAND.—A new departure was recently made when the New Zealand Government Railways Board notified its intention to exercise the option it had for the purchase of the S.O.S. passenger motor service between Wellington and Wanganui—approximately 140 miles—or 11 miles less than the distance by rail. It is stated that the Railways Board desires to achieve something in the way of co-ordination of road and rail service in N.Z. Although the railways are already operating 55 buses daily in some of the principal suburban localities, this is the first service to be undertaken on a comparatively long-distance run. The company bought out was in financial difficulties; but with its own central garage and repair shops in the Hutt Valley, the prospects are that the service can be made a financial success under railway management, particularly as competitive features of the existing arrangement will of course cease, resulting in many economies in operation.

NORTHERN IRELAND ROAD HAULIERS AND CO-ORDINATION.—The Northern Ireland Provincial Hauliers' Association decided on July 30 by a large majority to support the Government in the scheme suggested by Sir Felix Pole for the co-ordination of road and rail transport. The association requested the Government to discuss with all the interests concerned at a conference to be presided over by Sir Felix Pole certain differences and difficulties which had arisen.

LOADING OF SUGAR BEET.—The Licensing Authority for the East Midland Traffic Area has called the attention of carriers and others to the necessity for safe loading of sugar beet during the coming season. Carriers are asked to be careful to see that beet is safely loaded before leaving farms and other places at which loads are obtained, and every effort should be made to minimise the danger likely to be caused to vehicles by beet falling on to the roads.

Rail and Road. A train leaving the siding at the works of John I. Thornycroft & Co. Ltd. at Basingstoke with a consignment of various types of Thornycroft road vehicles, which are to be put into railway service in East Africa

SUPER-HIGH-PRESSURE STEAM RAILCARS IN GERMANY

Four-axle steam car with Doble high-pressure steam installation, German State Railway

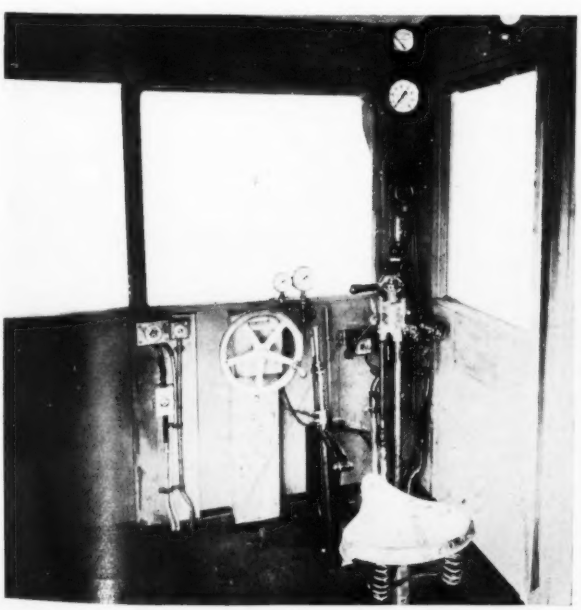
THE flexibility of the steam engine renders this form of motive power especially suitable for railway traction where large power outputs are called for, and the introduction of super-high-pressure steam engines of the condensing type enables its successful application also to low powered railcars.

For some time past the original Doble system has been further developed by both A. Borsig Maschinenbau A.G., Berlin-Tegel, and Henschel & Sohn A.G., Kassel. Two four-wheeled vehicles equipped by the former firm with the new super-high-pressure condensing steam engines have given so satisfactory results that the German State Railway has ordered double-bogie steam railcars of about 400-450 b.h.p.

The power plant of these vehicles consists of two independent sets each comprising an oil-fired boiler and a steam engine respectively. The latter is axle-hung in the fashion of an electric traction motor and drives the axle by means of reduction gears. Each engine has 2 cylinders of 100/175 mm. diameter with a piston stroke of 150 mm., and the piston valves are operated by Stephenson link motion. Each engine develops 200-225 b.h.p. at a normal speed of 1,200-1,400 r.p.m., and has an overload capacity of about 100 per cent. The exhaust steam from the engines is passed through a system of air-cooled condensers, the condensate thus produced being returned into the feed water tank. The consumption of boiler feed water is consequently remarkably low, since steam is issued into the atmosphere only when the whistle is blown or through inevitable small leakage in the circuit. The boilers are of the single water-tube type and capable of raising steam within a few minutes. The usually heavy stand-by losses are thus greatly reduced, and a vehicle is ready for service at very short notice. Owing to the special design of the oil burners, both the temperature and pressure of the steam produced are changed automatically to suit the power requirements at any particular moment, and waste of fuel is thus avoided. In addition, the control of the power plant is greatly simplified and is restricted to the operation of the cut-off and reversing and throttle levers respectively. The services of a fireman are dispensed with.

The new railcars are designed for speeds of 60 m.p.h., although higher velocities of up to 95 m.p.h. are possible without undue modifications of the power plant. The output of the latter is sufficient for the haulage of a trailer or two. A distinct feature of the new vehicles is their rapid acceleration, which renders them suitable for service on busy suburban lines.

We illustrated on page 974 of our issue of June 1 last the Henschel-built two-coach steam railcar with a Doble high-pressure steam generator which the Lübeck-Büchener Railway introduced on May 15 on express non-stop schedule between Hamburg and Lübeck.



Above: Two-axle steam car with Doble high-pressure steam installation, German State Railway; Left: A view in the driver's cab

Above: Hardinge Bridge; the breach from the isolated head of the right guide bank

Left: Unloading stone for the mole dyke

Below: Construction of the mole

An article on page 202 briefly describes the new protection works at the Hardinge (Lower Ganges) bridge

RAILWAY NEWS SECTION

PERSONAL

The official proceedings of the House of Lords, dated July 25, record that Charles Cheers, Baron Wakefield, having been created Viscount Wakefield of Hythe in the County of Kent, was (in the usual manner) introduced.

Great Western Railway Appointments

The following appointments are announced effective as from July 30:—

Superintendent of the Line's Department

Mr. K. W. C. Grand, Commercial Assistant to Superintendent of the Line, to be General Assistant to Superintendent of the Line.

Mr. G. Matthews, Assistant, Office of Superintendent of the Line, to be Operating Assistant to Superintendent of the Line.

Mr. G. E. Orton, Publicity Agent, to be Commercial Assistant to Superintendent of the Line.

Major M. J. M. Dewar, Trade Advertising Agent, to be Publicity Officer.

Mr. H. A. G. Worth, Junior Assistant to Divisional Superintendent, Newport, to be Trade Advertising Agent.

Mr. E. A. Glayzer, Office of Superintendent of the Line, to be Chief Clerk, Office of Superintendent of the Line.

Goods Manager's Department

Mr. J. A. Warren-King, Goods Agent, Birmingham, to be Assistant District Goods Manager, Birmingham, as from October 1, vice W. Quine, who is retiring.

Mr. G. J. Lees, Chief Clerk, District Traffic Manager's Office, Manchester, to be Goods Agent, Birmingham, as from October 1.

Mr. K. W. C. Grand, who, as announced above, has been appointed General Assistant to the Superintendent of the Line, G.W.R., was educated at Rugby, and joined the company's service in 1919 at Park Royal goods station. After gaining experience there, at Ealing Broadway, and in the Divisional Superintendent's office at Paddington, he was, in 1922, transferred to the General Manager's office. In March, 1926, he was appointed General Agent for the U.S.A. and Canada, and in May, 1929, on his return to England, was appointed Assistant Publicity Agent. On the expiration of the company's trade advertising agreement with their contractors, Mr. Grand was appointed Commercial Advertising Agent to organise and control the department newly created to deal with this branch of advertising. In January, 1932, on the retirement of Mr. W. H. Fraser he took over the Publicity Department with the title of Commercial Advertising and Publicity Agent. In April, 1933, Mr. Grand organised the first railway air service which the G.W.R. inaugurated between Cardiff and Plymouth, and subsequently extended to Birmingham. He became Commercial Assistant to the Superintendent of the Line in July, 1933, the post he now vacates to take over the duties of General Assistant.

Mr. K. W. C. Grand,

Appointed General Assistant to the Superintendent of the Line, G.W.R.

Mr. G. Matthews,

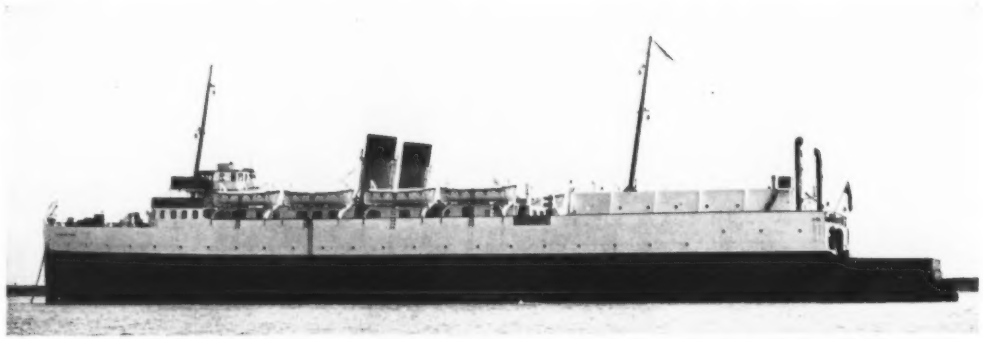
Appointed Operating Assistant to the Superintendent of the Line, G.W.R.

Mr. G. E. Orton.

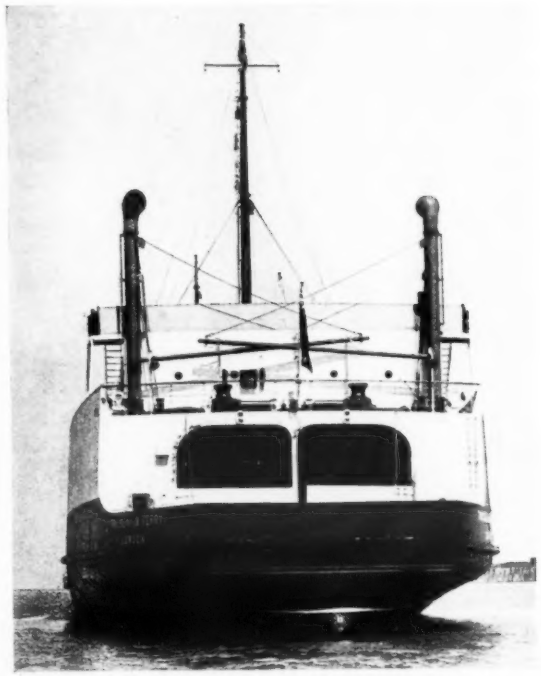
Appointed Commercial Assistant to the Superintendent of the Line, G.W.R.

Mr. Gilbert Matthews, who, as announced above, has been appointed Operating Assistant to the Superintendent of the Line, G.W.R., as from July 30 last, entered the company's service in the General Manager's Office in 1908. In 1909 and 1910 he gained experience in station working in the London Division, after which he went to America to study traffic operating on the Pennsylvania and New York Central Railroads. On his return to this country he was attached to the passenger train running section of the office of the Superintendent of the Line until his appointment, in 1925, as Chief Clerk to the Divisional Superintendent, Plymouth. In January, 1932, he was appointed Assistant to the Superintendent of the Line, dealing generally with staff matters until his present appointment.

Mr. G. E. Orton, who, as announced above, has been appointed Commercial Assistant to the Superintendent of the Line, G.W.R., entered the company's service in the Publicity Department in 1903 remaining there until 1912, when he was transferred to the General Manager's Office for employment in connection with joint arrangements, private sidings, Board of Trade regulations, accidents and new works. Except for 2½ years' war service, he remained in that office until, in 1923, he returned to the Publicity Department and was made Assistant Publicity Agent in 1926. In 1929 he became the company's General Agent in the United States and Canada, and shortly after his return to England



The train ferry steamer "Twickenham Ferry" (see article on opposite page)



Stern view showing after end of train space with passenger deck above

The "Twickenham Ferry" at Dover, which is to be the English terminal port of the new cross-Channel service to be inaugurated by the Southern Railway

became Assistant Commercial Advertising and Publicity Agent in January, 1932. On July 7, 1933, he was appointed Publicity Agent, the post he now vacates to take up his new duties as Commercial Assistant to the Superintendent of the Line. Mr. Orton was the originator of the hikers' mystery trips, subsequently adopted so widely in many countries.

Sir Henry Birchenough, Chairman of the Rhodesia and of the Mashonaland Railways, has arrived this week in England, on return from a tour of those systems.

SOUTH AFRICAN RAILWAY STAFF CHANGES

Mr. W. A. Moyers, B.A., B.A.I., M.Inst.C.E., has been appointed Chief Civil Engineer, South African Railways and Harbours, in succession to Mr. G. H. Whitehouse. Mr. C. G. C. Rocher, A.M.Inst.C.E., has been appointed Assistant Chief Civil Engineer and Mr. J. M. Greathead, A.M.Inst.C.E., Inspecting Engineer to the Administration.

We regret to record the death, on August 1, of Mr. W. R. R. Culver, formerly Secretary of the Railway Convalescent Homes. In our issue of December 29 last we published a portrait and biography of Mr. Culver on the occasion of his resignation from the secretaryship at the end of the year and outlined the work of organisation and development of the Homes which he so ably carried out first in an honorary capacity and from 1901 to 1933 as Secretary.

Mr. J. L. Murgatroyd, M.C., has been appointed Chief Engineer of the Southern Railways of Peru of the Peruvian Corporation. He was educated at Repton, joined the Royal Engineers, S.R., in 1914, and retired in 1919 as Captain, acting Major. In the following year he joined Robert McAlpine & Sons on public works and entered the service of the Great Central Railway in 1921 as a draughtsman, becoming Resident Engineer of the Wembley Exhibition loop line in 1923. Mr. Murgatroyd joined the Peruvian Corporation as Assistant Engineer in 1924 and was promoted to be District Engineer (Mountain section), Central Railway of Peru, in 1925. In 1929 he was posted as Assistant Engineer, Southern Railway of Peru. He is the elder son of Mr. S. L. Murgatroyd, the late Permanent Way Engineer (Southern Area) of the London & North Eastern Railway.

By an Argentine Government decree dated June 26, Sir Herbert Gibson, Bt., K.B.E., Chairman, Local Board, Buenos Ayres Great Southern Railway, has been officially recognised as a legal representative of the Buenos Ayres Western Railway.

The New Southern Railway Train Ferries

At 6.45 p.m. on Monday, July 30, the *Hampton Ferry*, the second of the three sister ships under construction for the new cross Channel train ferry service of the Southern Railway, was launched at the Neptune shipyard of Swan, Hunter, & Wigham Richardson Limited at Newcastle on Tyne. The naming ceremony was performed by Lady Abell, the wife of Sir Westcott Abell, K.B.E., who has been advising the Southern Railway throughout on the construction, and under whose general direction the design and building of the vessels has been carried out. The Southern Railway was represented at the launch by Mr. E. J. Missenden, M.B.E., Docks and Marine Manager.

The first of the three train ferries, the *Twickenham Ferry*, was launched on March 15 and has since completed exhaustive and highly successful trials. On the opposite page we reproduce three photographs of this vessel, which has arrived at Dover, the English terminal port of the new service, where a special dock is being constructed for the use of the service. The French terminal is to be at Dunkirk.

In view of the fact that the tides on each side of the Channel have a daily rise and fall of between 10 and 20 ft., an inclined slip was out of the question in this case owing to the necessity of having a gradient suitable for railway operation. The alternative of locks which would enable the train deck to be brought level with the shore track at any state of the tide was therefore adopted, and these locks are now nearing completion.

Four lines of rails are provided on the train decks of the vessels, giving space for 12 sleeping cars or 40 goods wagons. The deck above is allocated to passenger accommodation, including lounges, cabins, and a restaurant. An isolated garage for 25 cars, which need not have their petrol tanks emptied, is provided at the after end of the upper deck, and it will be possible for road motor vehicles to use the train deck, the surface between the rails being made level. The ships are 360 ft. long, 60 ft. in breadth, and 20 ft. in depth to the train deck, the normal load draught being 12 ft. 6 in.

Propulsion is by geared turbines constructed by the Parsons Marine Steam Turbine Co. Ltd., and supplied with steam by Yarrow-type water-tube boilers, coal fired by means of Taylor mechanical stokers. When the various possible schemes for propelling these vessels were considered, it was found that great advantages would attend the use of coal as fuel in an installation comprising automatic stokers, water-tube boilers, and steam turbines, particularly as, in this special case, the coal could be run on board the ships direct in railway wagons, and tipped into the ship's bunkers, without being handled after leaving the collieries.

Normally the speed of the train ferry steamers will be 15 knots. The third of the trio, which is to be called the *Shepperton Ferry*, is now being built by Swan, Hunter, & Wigham Richardson Limited, and will be ready in time for the inauguration of the service next year.

Railway Conciliation Machinery

The discussions on the subject of revised negotiating machinery for the railway conciliation grades, more particularly as to the constitution and functions of a tribunal to replace the National Wages Board, were resumed at a meeting held in London on Monday last between the General Managers of the four main line companies and representatives of the railwaymen's trade unions. There were present:—For the railway companies: Sir James Milne (G.W.R.) in the chair, Sir Ralph Wedgwood (L.N.E.R.), Sir Herbert Walker (S.R.), Mr. W. V. Wood (L.M.S.R.), and Mr. Kenelm Kerr (Chairman, Railways Staff Conference); for the National Union of Railwaymen, Mr. J. Henderson and Mr. J. Marchbank; for the Associated Society of Locomotive Engineers and Firemen, Mr. G. H. Tyler and Mr. W. J. Squance; and for the Railway Clerks' Association, Mr. F. Simpson and Mr. A. G. Walkden.

The report of the Special Joint Committee which was issued in February last indicated that there had been failure to reach agreement on certain important points and, although further conversations took place between the railway companies and the N.U.R. and R.C.A., the A.S.L.E. & F. adopted the attitude that the companies should initiate alternative proposals if the negotiations were to proceed. The society has now decided, however, to join the other two unions in the resumed discussions.

The trade unions had disagreed with the proposals of the companies on four points of principle, namely (i) Membership of the tribunal; (ii) binding decisions; (iii) restriction of items which may be referred to the tribunal; and (iv) private hearing of claims. The item to which both sides attach the greatest importance is the constitution of the final tribunal. The companies have maintained from the outset that the constitution of the National Wages Board, on which representatives of both sides sat as judges, was inherently unsatisfactory, while, on the other hand, the unions saw no reason for any fundamental change. It is understood that alternative methods of bridging the difference of view were fully discussed at this week's conference and, although no settlement could be reported, it was stated that the discussions would be resumed on August 20.

New Protection Works at the Hardinge (Lower Ganges) Bridge

Due to the swing or oscillation of the main stream of the Ganges from side to side, the right guide bank was breached in September last and other protection works were threatened. New works are just being completed to reinforce the older protection

To protect the Hardinge bridge and approach bank from probable serious damage, involving break in rail communication, during the coming flood season, some eleven thousand men have been working day and night for several months past, erecting protective and training works at top speed. The bridge was completed in 1915 at a cost of about 3½ crores of rupees or, say, £2,600,000 sterling, to replace the wagon and passenger ferry services that originally linked the main lines of the Eastern Bengal Railway located to the south and north of the Ganges, and formed part of the trunk routes between Calcutta and Northern Bengal, Darjeeling and Assam.

When the bridge was completed, the main channel of the river was close to the left bank, but it subsequently began to swing over towards the right bank at the point where it passes through the bridge, and at the same time swung over further towards the left bank in the reach upstream of the Sara guide bank. This tendency to swing periodically from one side to the other is a normal characteristic of alluvial rivers in general, but such swinging is usually confined within certain limits which vary for each river and also for different portions of the same river. The tendency of the Ganges in the vicinity of the Hardinge Bridge in recent years has been to move over towards an old channel, which it had previously occupied in 1868.

On receipt of the first news of a serious breach in the right guide bank in September, 1933, the Railway Board cabled to the High Commissioner for India asking him to request Sir Robert Gales—who had been the Engineer-in-Chief in charge of the design and construction of the bridge and is now a partner in Messrs. Rendel, Palmer & Tritton, Consulting Engineers to the Government of India—to come out to India and advise the Board regarding the work to be done for repairing the damaged guide bank and strengthening the protection works generally. Sir Robert Gales arrived in India at the end of November last and as a result of his inspection of the bridge, it has been decided to provide a mole for the protection of the south, or right, abutment by adding a curved head to the stump of the damaged guide bank, and to close the channel which had been formed at the back of the isolated head.

Measures and Expenditure Necessary

The items of work which were essential before the present flood season, in order to prevent damage to the bridge and further damage to the protection and training works, are detailed below, the roughly estimated cost being shown against each work:—

	In lakhs of rupees
1. Construction of a mole and backwater bund to protect the damaged right guide bank and the bridge from any damage	41·00
2. Reinforcing the apron of the right guide bank by means of additional stone boulders	1·75
3. Realignment and extension of the Sara and Raita protection banks ...	10·00
4. Realigning, widening the apron, and extending the Damukdia guide bank	10·23
5. Providing block protection round those piers which are in immediate danger of damage by the river ...	6·00
6. Equipment and general charges ...	8·00
Grand total	76·98

The following items of work will be deferred until after the present flood season, by which time it will be possible to know more definitely whether they are really necessary, and also whether the proposals require to be revised in the light of further experience gained during that season:—

	In lakhs of rupees
1. Further extension of the right (Damukdia) guide bank	14·00
2. Reinforcement of the left guide bank	8·40
3. Constructing marginal levees or flood embankments at Sara and Raita ...	4·70
4. Restoration of the right guide bank to its original form by repairing the existing gap in it	35·00
Grand total	62·10

Meanwhile it was also considered advisable to provide for a ferry service, in case through rail communication over the bridge should be interrupted during the monsoon season, and in this connection it was essential that the following preliminary arrangements should be completed forthwith to enable the ferry service to be brought into use at short notice:—

	In lakhs of rupees
1. Acquisition of necessary land for ferry terminals and approaches	0·12
2. Earthwork which must be completed before the flood season	0·43
3. Purchase of new broad gauge wagon ferry	5·25
4. Conversion of 14 miles of the existing metre gauge line to broad gauge ...	8·00
Total	13·80

If it should be necessary eventually to bring the ferry services into use, a further expenditure of Rs. 6·20 lakhs will be required.

The total expenditure immediately necessary is therefore Rs. 76·98+13·80=90·78, or, say, 90¾ lakhs, with a possible further outlay of Rs. 68·30 lakhs later.

Details of Works Involved

The molehead which is intended to serve as a temporary protection to the right abutment of the bridge consists of a stone dyke laid below low water level and an earthwork embankment above and behind it. The face of the embankment is being protected by stonework to guard against erosion by the river. The magnitude of the work involved in the erection of the dyke can be gauged from the fact that many lakhs of cubic feet of stone have been dumped into the river for the purpose, and it has taken the best part of four months to bring the dyke up to low water level. One of our illustrations on page 198 shows this stone dumping and others show the guide bank breach and mole construction.

The backwater bund has necessitated the erection of two parallel stone dykes laid in deep water, which have also been brought up to low water level. As an additional safeguard, to effect a watertight seal between the two dykes of the backwater bund, a line of steel sheet piling has been driven for a considerable distance. The mole and the backwater bund had to be raised some 40 ft. above low water level to be safe against high floods during the rains. Once the works had been brought up to the surface of the water, it did not take long to complete the upper portion. To ensure an uninterrupted supply of stone, new quarries have been opened in the hills around Asansol, Adra and Gomoh in addition to the existing ones in the Rajmahal hills.

Apart from the main work near the bridge itself at Paksey, subsidiary river training operations are being carried out at three other points, Sara, Raita, and Damukdia. The guide bank at Damukdia is being lengthened, the stonework completed and a part of it is being realigned to ensure a smoother flow of flood water along the bank. At Sara and Raita the bank is being cut back for a similar purpose.

The Echo Sounder Used

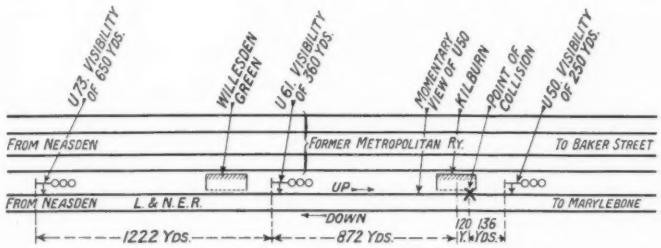
In order to ascertain the changes that are occurring in the bed of the river alongside the guide bank and around the piers of the bridge, investigations are being carried out daily, and recently an Admiralty type echo sounder has been obtained for the purpose. Once the works now in progress are completed it is anticipated that the safety of the bridge will be assured until such time as the restoration of the breached right guide bank can be effected. A large medical and sanitary staff is unremittingly looking after the welfare of the huge army of labourers. Temporary dispensaries and hospitals have been established, tube wells for drinking water sunk, and proper control is being maintained over foodstuffs.

MINISTRY OF TRANSPORT ACCIDENT REPORT

London & North Eastern Railway, April 2, 1934

This was a case of a light engine on the up line running into the rear of a special passenger train which, after standing at signal U.50, was just moving forward. There were only slight personal injuries among the passengers, but the guard just escaped by jumping from his van on to the track. The driver of the light engine was so seriously hurt that he could not give evidence until June 6.

The circumstances were inquired into by Colonel Trench, and a point that should at once be made is that, where the L.N.E.R. lines pass the Willesden Green and Kilburn stations of the former Metropolitan Railway, the tracks have to curve outwards round the south side of those stations. The southern portions of the station buildings are therefore obstructions to the long range of visibility that would otherwise be available for L.N.E.R. drivers. That is an important matter as signal U.50 is visible only momentarily before Kilburn station is reached and the view of it is then hidden until an engine is passing round the back of the station buildings.



Sketch plan showing point of collision

The driver of the light engine passed U.73 at " yellow " and was then busy cleaning up some of the boiler fittings. He was on top of signal U.61 before he saw it and then observed that it was at " red." He said he was in " half a mind to stop " but knowing that it was a stop-and-proceed signal he kept running, keeping a good look-out, until he sighted U.50. He had a good view of this signal during the short time it was visible to him and saw that it was " yellow." Unfortunately, it was " yellow " for the passenger train which had been stopped at it and the collision followed.

Colonel Trench is of opinion that Stevens, the driver of the light engine, having passed U.73 at " yellow " and running on an urban line with much curvature, should have remained continuously on the look-out, in which case he would have observed the aspect of U.61 in time to stop at it; apart from the necessity of observing the signal aspect, of which he could have had 360 yards' view, there might have been men working on the line. Secondly, seeing U.61 at " red " while passing it, he should have stopped as quickly as possible, even if he did overrun the signal, and waited for the minute prescribed by Regulations. Thereafter, even though he saw U.50 at " yellow," he ought, in accordance with regulations, to have continued to proceed cautiously as far as the second stop signal ahead, *i.e.*, the one ahead of U.50. It was clear from driver Stevens' evidence that he did not realise that this was the rule. If he had continued at the cautious speed which he said he had adopted immediately after passing U.61 at " red," he should have had no difficulty in stopping clear of any obstruction in sighting distance.

The unfortunate coincidence of the yellow aspect of U.50 being visible to Stevens at a time when he could not see the train which was standing at that signal, coupled with the curvature of the track behind Kilburn station, were, of course, contributory causes, but Colonel Trench cannot think that they exonerate Stevens from the responsibility for his negligence.

The present report concludes with observing that the whole question of stop-and-proceed working in connection with automatic signals has been under consideration with the railway companies for some months, and no useful purpose would be served by making recommendations at this stage in connection with this particular accident. It seems desirable, however, to draw attention to certain points which arose in this case.

When questioned in connection with his failure to stop when he realised that he was passing U.61 at " red," Stevens stated that if it had been a controlled signal, where the stop-and-proceed rule did not apply, he would certainly have stopped even though he might have overshot it by a short distance. Similarly, that he would have stopped if it had been an automatic signal equipped with a telephone to the nearest signal-box, such as is provided at some of these signals. In the absence of either of these features he evidently thought it was justifiable to proceed slowly, keeping a good look out. Colonel Trench cannot but think that this indicates an undesirable tendency to regard an automatic signal, unprovided with a telephone, as having less authority than an ordinary signal controlled by a signalman, or in telephonic communication with him. The driver added that in his recent experience of this area it was very unusual to have occasion to stop one minute and then proceed past a " red " indication; he thought he might have to do it perhaps once a year; it is clear, therefore, that it is not a case of familiarity breeding contempt.

Attention may also be drawn to the fact that driver Stevens had not realised that the regulations prescribe special caution and slow speed through *two* sections after stopping-and-proceeding at a " danger " signal, irrespective of the " caution " or " clear " aspect which may be displayed by the signal next ahead. This regulation was introduced in the January, 1933, rule book and was extended in 1934 to cover the case of a controlled signal as well as an automatic.

In this respect this accident presents a striking similarity to the accidents at Three Bridges, Southern Railway, in January, 1933,* and Alne, London & North Eastern Railway, in December, 1933,* in both of which cases a following driver did not realise that a signal ahead, which he could see at " yellow " or " green," had in fact been cleared for a train which was ahead of him but was still in the section, and, disregarding this rule of cautious driving at low speed, say 5 m.p.h., through *two* sections, increased his speed, with similar results.

London - Belfast - Glasgow Railway Air Service.—Details are now announced of the new air service which is to be introduced this month by Railway Air Services Limited between London (Croydon), Birmingham, Manchester, the Isle of Man, Belfast, and Glasgow. There will be one flight in each direction daily on weekdays, and De Havilland four-engined air liners will be employed. These are now nearing completion and the exact date in August of the inauguration of the service will be announced as soon as the machines are ready for regular duty. The timetable for the service is as follows :—

Glasgow	... dep.	9	15	a.m.	
Belfast	... arr.	10	5	,,	
	dep.	10	20	,,	
Isle of Man ...	... arr.	11	0	,,	
	dep.	11	5	,,	
Manchester ...	... arr.	11	50	,,	
	dep.	11	55	,,	
Birmingham ...	... arr.	12	25	p.m.	
	dep.	12	40	,,	
London (Croydon)	... arr.	1	30	,,	
London (Croydon)	... dep.	3	10	p.m.	
Birmingham ...	... arr.	4	0	,,	
	dep.	4	10	,,	
Manchester ...	... arr.	4	40	,,	
	dep.	4	55	,,	
Isle of Man ...	... arr.	5	40	,,	
	dep.	5	45	,,	
Belfast	... arr.	6	25	,,	
	dep.	6	40	,,	
Glasgow	... arr.	7	30	,,	

* THE RAILWAY GAZETTE of August 18, 1933, and April 13, 1934, respectively

QUESTIONS IN PARLIAMENT

Tourist Traffic

Capt. Cunningham-Reid on July 26 asked the Prime Minister if he would consider setting up a Government Department for the encouragement of the tourist traffic in Britain on the lines of those established in France and other Continental countries.

Mr. Baldwin (Lord President of the Council) replied.—No. The Travel and Industrial Association of Great Britain and Ireland was formed in 1929 to perform the functions referred to. Each year since its inception the association has received a grant from H.M. Government to assist it in its work which it performs in co-operation where necessary with the Government Departments concerned and with the relevant bodies in Scotland and Ireland.

Season Ticket Rates on L.M.S.R.

Major Jesson asked the Minister of Transport whether he was aware that the travelling rates charged to season ticket holders by the L.M.S.R. in the Liverpool district were substantially higher than in any other district; and whether, bearing in mind that there was not now the severe omnibus competition to contend with, he would represent to the railway company that they should review their charges and bring them down to a more equitable basis.

Capt. Hudson (Lord of the Treasury) replied.—The Minister is not aware that the rates charged to season ticket holders by the L.M.S.R. in the Liverpool district are substantially higher than in any other district. The standard rates for season tickets on the railways of the amalgamated companies were settled by the Railway Rates Tribunal under the provisions of the Railways Act, 1921, and he is informed by the L.M.S.R. that the rates charged by that company for season tickets in the Liverpool district are either the standard rates or rates below the standard. My hon. friend has no jurisdiction in this matter.

Railway Air Services

Mr. Hutchison on July 30 asked the Postmaster General whether, in deciding on giving the air-mail contracts to Railway Air Services, he took into consideration similar services which could be rendered by private air line companies; and whether he asked them to tender.

Sir Kingsley Wood.—The use of the inland air services which have been placed at my disposal by Railway Air Services Limited is purely experimental. My hon. friend may rest assured that before final arrangements are made, due regard will be taken of any available air service which will be suitable for Post Office requirements.

River Derwent Navigation

Mr. Culverwell asked the Minister of Transport whether his attention had been called to the action taken by the L.N.E.R. in serving notice on coal-owners that it was the intention to close the River Derwent for navigation as from August 1; and whether, having regard to the injury which would be done to the inhabitants of the districts adjacent to the River Derwent by the waterway being closed to navigation, as was proposed, he would consider the desirability of securing by legislation or otherwise that the waterway in question should be kept open.

Mr. Hore-Belisha.—I have noticed statements in the press to the effect that the railway company, on behalf of the proprietors of the navigation, have notified owners of boats that the locks in the river will be closed, but I am not fully aware of the present position. I will, however, make inquiries and let my hon. friend know the result.

Number of Railway Employees

Sir Alfred Beit asked the Minister of Transport if he would state the number of persons employed on the railways at the latest convenient date this year and the number so employed at the same period in 1931, 1932, and 1933.

Mr. Hore-Belisha.—A census of the staff employed by the railway companies is taken annually for a week in March and details are published in the Railway Companies' (Staff) Return. The number of persons employed by the railway companies (including persons employed in their ancillary businesses) during March of 1931, 1932, and 1933 were respectively 615,592, 597,971, and 566,300

G.W.R. Valuation for Rating

The Railway Assessment Authority has completed its provisional valuation of the Great Western Railway (including docks and canals), which gives £7,560,000 as the total average net receipts of the undertaking for the years 1928/29, and £2,800,000 as the net annual value, compared with existing rating assessments of about £2,300,000. The work of dividing the total of £2,800,000 fairly between all the rating areas and parishes on the system has involved the referencing of about 2,000 stations and works and the estimation of train-mile receipts for every section of line. The system (including joint lines) extends into 32 counties, 455 rating areas (including 26 county boroughs), and 1,973 parishes, &c. To the railway proper is allocated £2,533,012, to the docks £265,000 and to the canals £1,988. This is the first time that a comprehensive valuation of the undertaking has been made for rating purposes. There has been, therefore, a considerable shifting of values between the various areas.

The totals of the new net annual values in certain individual counties and county boroughs and groups of counties and county boroughs are as given in the accompanying table.

After hearing and considering any representations made to it at 32, Queen Anne's Gate, S.W.1, up to October 30, the Authority will "complete" the roll and thereafter appeals will lie to the Railway and Canal Commission on questions of law and fact and thence to the House of Lords on questions of law only. The roll will then be "revised" and the local valuation lists in force from April, 1931, onwards will be altered so as to embody the new assessments. The Authority has already issued provisional valuations of the Southern Railway and of the former Metropolitan Railway, but it has not yet completed those for the London Midland & Scottish Railway and the London & North Eastern Railway. Editorial reference to the Great Western Railway valuation is made elsewhere in this issue.

	£	£
County Boroughs: England		
Bath	6,678	
Birkenhead	9,897	
Birmingham	55,792	
Bristol	50,285	
Exeter	7,648	
Gloucester	9,706	
Oxford	9,279	
Plymouth	20,004	
Reading	27,323	
West Bromwich	6,814	
Wolverhampton	19,237	
Worcester	9,282	
Remaining county boroughs in England	18,068	
		250,013
County Boroughs: Wales		
Cardiff	117,005	
Merthyr Tydfil	12,971	
Newport	65,912	
Swansea	90,015	
		285,903
Counties: England		
Berks	165,815	
Bucks	65,889	
Chester	39,065	
Cornwall	66,544	
Devon	91,427	
Dorset	12,311	
Gloucester	128,468	
Hereford	38,170	
London	107,914	
Middlesex	97,293	
Northants	7,341	
Oxford	64,602	
Salop	104,128	
Somerset	142,195	
Southants	6,265	
Stafford	26,963	
Warwick	59,120	
Wilts (including the borough of Swindon)	205,192	
Worcester	59,052	
Remaining counties in England	140	
		1,487,894
Counties: Wales		
Brecon	14,184	
Cardigan	7,581	
Carmarthen	62,227	
Denbigh	25,409	
Glamorgan (including the docks at Barry, Penarth and Port Talbot)	422,413	
Merioneth	15,144	
Monmouth	181,492	
Montgomery	16,880	
Pembroke	20,547	
Remaining counties in Wales	10,313	
		776,190
Total		£2,800,000

The Great Western and South Wales

On Wednesday and Thursday, August 1 and 2, Sir Robert Horne, Chairman of the Great Western Railway, accompanied by a number of Directors, Sir James Milne, General Manager, and the chief officers of the company, paid a visit of inspection to Cardiff and Newport. It will be recalled that we issued on December 8, 1933, a Special Number of THE RAILWAY GAZETTE in which the new works undertaken by the Great Western Railway under the Development (Loans Guarantees and Grants) Act, 1929, were described. Those at Cardiff and Newport were inspected, as well as other modernisation works undertaken in recent years by the company, and certain plant of important industrial concerns, including Messrs. Spillers' new silo and mills, Guest Keen Baldwins' ore discharging wharf, and the site of that firm's Dowlais works extension.

Sir Robert Horne presided over a luncheon at Cardiff on Wednesday, at which representatives of the principal trading interests were guests. Among them were the following:—

Mr. Thomas Armstead, J.P., Director, Thomas Owen & Co. Ltd.; Sir John Field Beale, K.B.E., Chairman, British (Guest Keen Baldwins) Iron & Steel Co. Ltd.; Sir John W. Beynon, Bt., C.B.E., J.P., Chairman, T. Beynon & Co. Ltd.; Messrs. Charles Burn, Manager, Joseph Rank Limited; R. Cadman, Director, Cardiff Aeroplane Club and The British Wire Rope Co. Ltd.; Geoffrey Cory-Wright, Director, Coal Distributors (South Wales) Limited; H. Cyril David, Robinson David & Co. Ltd.; John W. Duncan, Chairman, Penarth Pontoon Slipway & Ship Repairing Co. Ltd.; John Elliott, Chairman, Dry Dock Owners' and Ship Repairers' Federation Limited; Ewart Evans, Coal Distributors (South Wales) Limited; Thomas Evans, C.B.E., J.P., Vice-Chairman, Ocean Coal Co. Ltd.; William Evans, J.P., Managing Director, Thomas & Evans Limited; Finlay A. Gibson, Secretary, Monmouthshire and South Wales Coal Owners' Association; Alderman A. E. Gough, J.P., Lord Mayor of Cardiff; Messrs. Edmund L. Hann, Chairman and Managing Director, Powell Duffryn Steam Coal Co. Ltd.; J. S. Hollings, Joint Managing Director, British (Guest Keen Baldwins) Iron & Steel Co. Ltd.; Alec. S. Johnson, M.P.S., President, Cardiff Chamber of Trade; Chubb Jones, Chairman, South Wales Coal Exporters' Association Limited; Griffith J. Jones, J.P., Chairman, Bristol Channel District Association of Chartered Shipbrokers; Charles H. Keen, Chairman, Cardiff Aeroplane Club, and Director, Guest Keen & Nettlefolds Limited; Wm. North Lewis, J.P., Chairman and Managing Director, Insoles Limited; Norman McNeil, Director, Tredegar Associated Collieries & Shipping Co. Ltd.; H. H. Merrett, Managing Director, Gueret Llewellyn & Merrett Limited, High Sheriff of Glamorganshire; Howard Neale, Director, Neale & West Limited; D. Rupert Phillips, J.P., Director, Penarth Pontoon, Slipway & Ship Repairing Co. Ltd.; Percy Phillips, Evans & Reid Coal Co. Ltd.; Stanley Potter, J.P., Director, Spillers Limited; M. Ragody, Chairman, Cardiff and Bristol Channel Pitwood Importers' Association; D. Kenvyn Rees, Town Clerk, Cardiff; G. Leighton Seager, C.B.E., J.P., President, Cardiff Incorporated Chamber of Commerce; Sir William Seager, D.L., J.P., Chairman, W. H. Seager & Co. Ltd.; Messrs. Wm. Reardon Smith and Douglas Smith, Directors, Sir Wm. Reardon Smith & Sons Ltd.; G. E. Aeron Thomas, Chairman, Commercial Committee, Monmouthshire and South Wales Coal Owners' Association; Sir Robert Webber, J.P., Chairman, Cardiff Business Club; and Sir Charles Wright, Bt., K.B.E., C.B., Deputy Chairman and Managing Director, British (Guest Keen Baldwins) Iron & Steel Co. Ltd.

The Great Western Railway directors and officers present were :—

Messrs. J. Auld, C. J. T. Billingham, S. A. Blackall, J. C. Blundell, B. Carpenter, R. Carpmael, C. B. Collett, H. E. Cracknell, P. E. Culverhouse, C. R. Dashwood, Lord Davies, Mr. F. R. E. Davis, Lord Dunraven, Mr. M. C. Harrison, Sir Robert Horne, Mr. C. M. Jacobs, Sir Henry Mather-Jackson, Mr. A. Maynard, Sir James Milne, Messrs. C. S. Page, F. R. Potter, A. S. Quartermaine, C. T. H. Riches, J. H. Swallow, Sir Wm. James Thomas, Messrs. W. J. Thomas, F. G. Wainwright, and H. L. Wilkinson.

Lord Davies, in the absence of Lord Palmer through ill-health, proposed the toast of "The City and Trade of Cardiff," and spoke of the civic foresight of Cardiff, represented by its magnificent civic buildings. It was the aim of the Great Western Railway to try to keep in tune, and the new general station was a token of this and of the desire of the company to co-operate with all sections of the community in South Wales. He coupled the toast with the name of the Lord Mayor of Cardiff, who, as a Great Western man, was representative of the many links that exist between Paddington and South Wales.

Alderman A. E. Gough, Lord Mayor of Cardiff, responding, said that Cardiff realised in the Great Western Railway one of its chief assets. Cardiff was well situated for the establishment of new industries and the wonderful facilities developed by the railway company at the docks enhanced its value. It was not generally realised that Cardiff was the nearest large port to America, and that its transport facilities were equal to any demand.

Sir John Field Beale, proposing the toast of "The Great Western Railway Company," mentioned as gestures indicative of confidence in the present fiscal policy of the country and of the Great Western Railway, the great new works which his company, the British (Guest Keen Baldwins) Iron and Steel Co. Ltd. was erecting, while the associated firm of Guest Keen & Nettlefolds Limited was erecting alongside a smaller but still important works. He paid a tribute to the railway company for the great enterprise shown since absorbing the local railways, and remarked that negotiations between industrial interests in South Wales and the Great Western Railway were always eased by the knowledge that the company would be considerate and reasonable. He wished the Great Western Railway an overflowing measure of prosperity.

Sir Robert Horne, in his response, likened the Great Western and Cardiff to the branches of a pair of scissors. They were intimate partners and mutually dependent. There had been during the depression a serious fall in tonnage and in revenue at Cardiff, but Sir Robert expressed optimism concerning the future of the coal trade. There were opportunities for development which he hoped would be taken. The iron and steel industry was to receive a great fillip by the new works mentioned by Sir John Field Beale, and he thought that low temperature carbonisation of coal, in which he had confidence, might prove well worth exploitation to South Wales, just as the hydrogenation process inaugurated by Imperial Chemical Industries at Billingham had proved successful. He thought also that there was a great future for pulverised coal. The Great Western in South Wales was a large employer of labour and used large quantities of coal. It was also an important payer of rates, and, with all its interests in the district, was anxious to do everything possible for the maintenance of old industries and the support of new.

[A report of the Newport luncheon, held yesterday, will appear in our next issue.—ED. *R.G.*]

Midlands-I.O.W. Railway Air Service Inauguration

The great expanse of Southampton Aerodrome, some four miles from the business centre of the town, was on Saturday morning last occupied by a tiny group of spectators who, now and again, glanced expectantly at the heavily-clouded and wind-swept sky. Close upon 11.30 there was a distant droning overhead and a few minutes later a silvery aeroplane, bearing the inscription G—ACVD, encircled the airport and made a perfect landing. The machine, a De Havilland Dragon eight-seated two-engined aeroplane, was the pioneer of the new Birmingham-Bristol-Southampton-Cowes Railway Air service which was to be officially inaugurated on the following Monday, July 30.

The flying party included Mr. G. E. Orton, Commercial Assistant to the Superintendent of the Line, G.W.R., and Mr. E. N. Biggs, of the G.W.R., and press representatives from Birmingham and Bristol. They were greeted by the waiting group, among whom was the Mayor of Southampton (Mr. Buck) and Mr. A. Berriman and Mr. J. L. Harrington, representatives of the Southern Railway. The trip, it seemed, had proved in all respects a very pleasant and successful one.

The flyers soon re-embarked and made ready for their final destination—Cowes. Over this last stage of the journey, however, room was made in the plane for the Mayor of Southampton. The rest of the party present followed to Cowes in a speed boat from Hythe ferry. Rapidly as this vessel sped over Southampton Water it took practically three times longer to do the journey than the plane.

Mr. C. Grasemann, Public Relations and Advertising Officer, Southern Railway, was at the landing place to greet the party and lead the way to the Gloster Hotel, where they found Mr. J. B. Elliott, Assistant Traffic Manager, Southern Railway, awaiting them. The proceedings at the subsequent luncheon were delightfully informal. In a brief speech at the close the Mayor of Southampton proposed "Success to the Railway Air Services," coupling it with the names of Mr. Elliott and Mr. Orton.

RAILWAY AND OTHER REPORTS

Southern Railway.—The Secretary writes, July 26:—"The directors announce that for the half-year ended June 30 last the receipts from passenger train traffic have increased by £125,000, as compared with the corresponding period of last year, and the goods train traffic shows an increase of £155,000. Railway expenditure has increased by £190,000, mainly due to increased payments for salaries and wages. The net receipts from steamboats, docks, harbours and wharves, hotels, interest, &c., remain about the same. The net revenue for the half-year is approximately £90,000 more. The directors have decided not to declare any interim dividend on the preferred ordinary stock. Dividends at the rate of £5 per cent. per annum (£2 10s. per cent. for the half-year) on the guaranteed preference and preference stocks will be paid (less income tax) on August 14 next to those proprietors whose names were registered in the books of the company on July 6, the date when the balances were struck, and, unless payment has been directed in a different manner, the warrants will be posted on August 13."

London & North Eastern Railway.—The Secretary writes, July 27: "The directors, after providing for the payment of fixed charges and interest on debenture stocks, have declared interim dividends for the past half-year at the following rates:—2 per cent. for the half-year on the 4 per cent. first guaranteed stock; 2 per cent. for the half-year on the 4 per cent. second guaranteed stock; the warrants for these dividends will be posted on August 14. No transfer from the general reserve fund has been required to meet the payment of these dividends as against a transfer of £600,000 from that fund at the same date last year. Consideration of payment of dividend upon other stocks has been deferred until the accounts for the whole year are available.

"The total increase in gross receipts of railway and ancillary businesses and miscellaneous receipts (net), compared with the corresponding period of 1933, amounts to £1,840,000; the estimated increase in expenditure compared with the corresponding period of 1933 amounts to £1,154,000; leaving an increase in the net receipts of £686,000. Of the total increase in railway receipts, passenger train traffic has yielded 6 per cent.; merchandise (excluding Classes 1-6) 21 per cent.; minerals and merchandise (Classes 1-6) 33 per cent.; and coal, coke and patent fuel 40 per cent. Of the total increase in railway expenditure, maintenance of rolling stock accounts for 71 per cent.; locomotive running expenses 16 per cent.; maintenance of way 7 per cent.; and all other charges 6 per cent.

"For the 26 weeks ended June 30, compared with the corresponding period of 1933, the number of passengers originating on the company's system (excluding season tickets) showed an increase of 3,315,000 or 4·13 per cent.; the total merchandise and coal traffic (originating on the company's system or invoiced by the company) showed an increase of 6,665,000 tons or 14·2 per cent.; passenger engine mileage increased by 1,043,000 miles or 2·9 per cent.; and goods engine mileage increased by 3,093,000 or 8·36 per cent. The additional expenditure in salaries and wages during the six months has amounted to £450,000."

Great Western Railway.—The Secretary writes, July 27:—"The gross receipts from railway and ancillary businesses for the half-year ended June 30, 1934, were £593,000 more than in the corresponding period of last year. Expenditure on railway and ancillary businesses has increased by approximately £261,000, and the increase in net revenue from all sources, including interest, amounted to £370,000. The total increase in railway receipts was £507,000, made up as follows—passenger train receipts, £26,000; goods train receipts, £473,000; and miscellaneous receipts, £8,000. The increase in gross receipts from ancillary businesses was £86,000. The increase in expenditure was largely due to the employment of additional staff to provide for the growth in traffic which has taken place during the half-year. After making an appropriation from the free reserves of the company, the directors have decided to declare an interim dividend of ¼ per cent. on the consolidated ordinary stock for the half-year to June 30, which compares with a dividend of ¼ per cent. for the half-year ended June 30, 1933. Dividend warrants will be posted on August 15.

Bengal & North Western Railway.—The accounts for the half-year ended March 31 show gross earnings, open system, of Rs. 1,68,43,050 (a decrease of Rs. 11,124 compared with the corresponding period), and working expenses, open system, amounted to Rs. 73,25,788 (a decrease of Rs. 2,69,776). Net earnings, open system, were thus Rs. 95,17,262 (an increase of Rs. 2,58,652), and the percentage of working expenses to gross earnings was 43·49 (against 45·07). The company's share of net earnings in sterling (at 1s. 6d. a rupee), after deduction of Indian income-tax and net Indian charges, was £382,074 (against £347,755). The board has declared an interim dividend on the ordinary stock of 4 per cent., together with a bonus of 4 per cent., or 8 per cent. (the same) in all, for the half-year, less income-tax at 2s. 6d. in the £. This will absorb £210,000 net, leaving £93,143 to be carried to the second half of the year. The expenditure on earthquake damages is approximately estimated at Rs. 4,05,000 on the company's section, and Rs. 18,92,000 on the Tirhut section, a total of Rs. 22,97,000. On the company's section Rs. 74,240 has been charged off during the half-year. On the Tirhut section Rs. 1,11,228 has been charged off during the half-year. The damage caused to the line has now been repaired sufficiently to establish through running on all sections except between Saganli and Ramgarhwa on the Tirhut State Railway. The section Sitamarhi-Bairagnia, although partly opened for traffic, will have to be closed during the rains.

Rohilkund & Kumaon Railway.—Gross earnings, open system, for the half-year ended March 31 were Rs. 36,53,389 (an increase of Rs. 2,82,520 compared with the corresponding period), and working expenses, open system, were Rs. 16,19,390 (an increase of Rs. 1,14,174). Thus net earnings, open system, were Rs. 20,33,999 (an increase of Rs. 1,68,346), and the percentage of working expenses to gross earnings was 44·33 (against 44·65). The company's share of net earnings in sterling (at 1s. 6d. to the rupee), after deduction of Indian income-tax and net Indian charges, &c., was £68,301 (an increase of £12,999). The board has declared an interim dividend on the ordinary stock of 4 per cent., together with a bonus of 2 per cent., or 6 per cent. (the same) in all, for the half-year, less income-tax at the rate of 2s. 6d. in the £. This will absorb £21,000 net, leaving a balance of £27,683 to be carried to the second half of the year.

W. & T. Avery Limited.—The accounts for the year ended March 31, 1934, show a net profit of £102,925, compared with £95,512 for 1932-33. Preference and interim dividends absorbed £37,604, and it is proposed to place £10,000 to reserve and to pay a final ordinary dividend of 10 per cent. (making again 15 per cent. for the year), after which the balance forward is increased from £59,124 to £59,590. The outstanding debenture stock (4½ per cent.) was redeemed on January 1 at the rate of 104½ per cent.

Gloucester Railway Carriage & Wagon Co. Ltd.—Revenue account for the year ended May 31, 1934, after making provision for depreciation, shows a loss of £46,986, and after deducting the balance brought forward, leaves an adverse balance of £46,438. The directors propose to transfer £50,000 from reserve, and to carry forward £3,562. The company's subsidiary, the Gloucester Foundry Limited, made a satisfactory profit in its financial year to December 31 last, and this progress continues to be well maintained. The yield from other investments, including £183,740 in Wagon Repairs Limited, has slightly exceeded 8 per cent. Owing to the continuance of depression in oversea countries, the demand for railway rolling stock from the company's regular oversea customers—who in past years have taken approximately 85 per cent. of the company's output—was again negligible.

NOTES AND NEWS

Road Traffic Act, 1934.—The Royal Assent was given on July 31 to the Road Traffic Act, 1934.

L.M.S.R. Order Confirmation Act, 1934.—The Royal Assent was given on July 25 to this Act, which confirms a Provisional Order relating to the acquisition of lands in Scotland and giving extensions of time for completion of works originally authorised by Caledonian Railway Acts and Orders.

London Transport Act.—The Royal Assent was given on July 31 to the London Passenger Transport Act, 1934. This measure provides, *inter alia*, for the withdrawal of the through Inner Circle service, for running trolley vehicles in substitution for tramways in certain areas, and for the replacement in certain cases of the underground conduit system by overhead wires.

Canadian Pacific Earnings.—Gross earnings of the Canadian Pacific Railway for the month of June, 1934, amounted to $10,009,000, a decrease of $431,000 in comparison with June, 1933. In the working expenses (including pensions) there was a reduction of $137,000, leaving net earnings $294,000 lower, at $1,756,000. For the half-year to June 30, 1934, gross earnings were $57,210,000, an increase of $6,487,000, and net earnings $8,055,000, an increase of $3,194,000 on the first half of 1933.

Canadian National Earnings.—For the month of June, 1934, gross earnings of the Canadian National Railways amounted to $13,915,447, an increase of $389,425 in comparison with June, 1933. Operating expenses ($12,927,154) at the same time advanced by $387,027, leaving net earnings $2,398 higher, at $988,293. Gross earnings for the half year to June 30, 1934, were $79,496,747, an improvement of $12,021,876 on the first half of 1933, and there were net earnings of $4,378,541, contrasting with a deficit of $2,978,982 for the first six months of last year.

The Week's Road Accidents.—The Secretary to the Ministry of Transport has issued the following return, for the week ended July 21, of persons killed or injured in road accidents :—

	Killed in accidents reported during the week	Reported during the week as having died as the result of accidents occurring in previous weeks	Injured in accidents reported during the week
	No.	No.	No.
England	94	21	4,575
Wales ...	9	2	228
Scotland	11	6	459
	114	29	5,262

The total fatalities of the week as the result of road accidents were, therefore, 143, or the same figure as for the previous week. Injuries have, however, fallen from last week's total of 5,582.

Tilbury Station Re-named.—Tilbury Docks station, L.M.S.R., will in future be known as Tilbury Town for Tilbury Docks.

Proposed Eurasian Tunnel.—The city authorities of Istanbul, Turkey, are preparing plans for the construction of a tunnel under the Bosphorus to link Europe and Asia. The tunnel would be constructed between Arnoutkenny and Vanikenny.

Victoria Pier, Hull.—The Public Works Facilities Scheme (Kingston-upon-Hull Corporation, Victoria Pier) Confirmation Act, 1934, received the Royal Assent on July 31. This provides for the improvement of the pier at Hull used by the L.N.E.R. New-Holland-Hull ferry steamers. Two new vessels for this service have been ordered.

Inner Circle Trains.—London Transport has equipped Inner Circle trains with a new route diagram, showing, for the sake of simplicity, stations called at by Inner Circle trains and no others. Certain of the reconstructed cars, which at first carried large yellow boards with "Circle" in black letters, now have "Inner Circle" in white letters on blue enamel, and experimentally some of these have circular red targets as a background.

London Transport Acquisitions.—During the past month the London Passenger Transport Board took over, on July 11, the 11 buses of the Westminster Omnibus Co. Ltd.; and on July 18 the three buses of the St. George Omnibus Co. Ltd. There remain nine companies in the Central Area still to be transferred, of which the Chocolate Express Omnibus Co. Ltd. and the City Motor Omnibus Co. Ltd. will probably be the next. The Country Services department took over on July 11 the appropriate London parts of the businesses of Westcliff Motor Services Limited and of Tilbury Safety Coaches Limited. These acquisitions leave only three small country businesses yet to be taken over.

Proposed Government Purchase of Aidin Railway.—According to a Reuters message from Istanbul, it is believed that the Turkish Government will shortly enter into negotiations with a view to purchasing the British-owned Izmir-Aidin Railway. The Turkish Minister of Public Works has just visited Smyrna and is understood to have carried out a thorough inspection of the line. The original concession for the railway was granted in July, 1856, and the first section, 27 miles, opened on December 24, 1860. It was completed to Aidin on July 1, 1866, and various branches were built between 1881 and 1889; the main line was extended to Dinair in the latter year. The present terminus was not reached until 1912. Under a convention of 1906 the concession was prolonged to 1950.

Proposed North-East Coast Railway Service.—Speaking at Sunderland this week, Mr. C. F. S. Gamble, of Imperial Airways Limited, stated that there was every prospect of an air service covering the north-east coast district being started by Railway Air Services Limited.

The Electricity Breakdown.—A weak spot in the electric grid scheme was revealed on Sunday morning last when a breakdown at Battersea power station necessitated all stations being disconnected and the re-starting-up of the system in sections. It appears that the mishap occurred at the time when the second large generator was being overhauled and could not be put into operation. London Transport trains on the Piccadilly Line north of Finsbury Park were stopped from 11.45 a.m. to 12.20 p.m., and those on the District Line, east of Bow Road, during the same period. Another stoppage was on the Southern Railway line between Earlswood and Brighton, although suburban services were not affected.

"Now's the Time," says Mr. Ashton Davies.—In the July issue of *Quota News*, the official organ of the Quota League, Mr. Ashton Davies, Chief Commercial Manager, L.M.S.R., stresses the fact that now is the time for everybody on the L.M.S. to help to get more passengers as everybody is now thinking about holidays, and by saying the right word at the right moment, "we shall be able to influence any number of new passengers." Mr. Davies gives his readers some useful hints in this connection, which, it is hoped, will be taken full advantage of. The issue contains an interesting article by Mr. T. W. Royle, Assistant Chief Commercial Manager, and other readable matter.

Success of St. Mary Cray Electrification.—Evidence of the effect of the electrification upon traffic in new housing areas is provided by the Southern Railway traffic figures for the Bickley Junction to St. Mary Cray portion of the line which has been operated by electric traction since May 1. During the month of May, 27,879 passenger journeys were made over this section of the line compared with 16,058 in May, 1933—an increase of over 73 per cent. During the years from 1924 to 1934, prior to electrification, passenger traffic for the same period had increased by about 4,000 only. The St. Mary Cray extension is the first portion of the scheme of electrification to Sevenoaks, the whole of which it is anticipated will be in operation on January 1, 1935.

The "Model Engineer" Exhibition.—The sixteenth annual "Model Engineer" exhibition of engineering and marine models, tools, and light machinery will be held at the Royal Horticultural Hall, Westminster, from September 6 to 15. There will be a

display of working models by members of the Society of Model and Experimental Engineers and other clubs; a trade section with a comprehensive show of lathes, light machine tools, workshop equipment and electrical and scientific apparatus; and a competition section in which numerous cups, medals, and other prizes are offered, including a special cup presented by Admiral Sir Reginald Bacon, K.C.B., for the best piece of amateur mechanical work. A passenger-carrying railway track will also be in operation. The exhibition is being organised by Percival Marshall & Co. Ltd., 13-16, Fisher Street, W.C.1, from whom all particulars can be obtained.

T.O.T. Annual Sports.—The sixth annual T.O.T. sports meeting was held at the Chiswick Works (L.P.T.B.) ground on Saturday last. Particular interest was attached to this year's meeting, which was attended by some 5,000 persons, as it was the first in which late Metropolitan Railway and L.C.C. Tramway employees were taking part. The Metropolitan debut proved most successful, as this branch of London Transport succeeded in winning the "Aggregate" cup with a total of 31 points. Chiswick General, the holders, were second with 30 points, and District Railway third. At the conclusion of the afternoon, which saw the breaking of two records, Lady Ashfield, accompanied by Lord Ashfield, presented the prizes to the successful competitors.

French Railway Fares Claim to be Cheapest in Europe.—According to the *Journée Industrielle*, passenger fares on the French railways are still the cheapest in Europe, despite a heavy tax on passenger tickets. Compared with the gold franc fares in 1914, prior to the war, the average increase in French railway fares is at the coefficient of 0·68, whereas for the British Isles the coefficient is 1·50; for Germany, 1·43, 1·14, and 1·80, according to the class; Switzerland, 1·52; Austria, 1·03; Sweden, 1·90; and Belgium, 1·16.

British and Irish Railway Traffic Returns

GREAT BRITAIN	Totals for 30th Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
L.M.S.R. (6,940¾ mls.)	£	£	£	£	£	£
Passenger-train traffic...	674,000	649,000	+ 25,000	13,593,000	13,411,000	+ 182,000
Merchandise, &c. ...	420,000	411,000	+ 9,000	13,267,000	12,174,000	+1,093,000
Coal and coke ...	185,000	179,000	+ 6,000	6,803,000	6,513,000	+ 290,000
Goods-train traffic ...	605,000	590,000	+ 15,000	20,070,000	18,687,000	+1,383,000
Total receipts	1,279,000	1,239,000	+ 40,000	33,663,000	32,098,000	+1,565,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	428,000	422,000	+ 6,000	8,731,000	8,649,000	+ 82,000
Merchandise, &c. ...	299,000	290,000	+ 9,000	9,223,000	8,378,000	+ 845,000
Coal and coke ...	190,000	187,000	+ 3,000	6,793,000	6,182,000	+ 611,000
Goods-train traffic ...	489,000	477,000	+ 12,000	16,016,000	14,560,000	+1,456,000
Total receipts	917,000	899,000	+ 18,000	24,747,000	23,209,000	+1,538,000
G.W.R. (3,750 mls.)						
Passenger-train traffic...	287,000	295,000	— 8,000	5,636,000	5,684,000	— 48,000
Merchandise, &c. ...	188,000	179,000	+ 9,000	5,336,000	4,917,000	+ 419,000
Coal and coke ...	90,000	91,000	— 1,000	2,965,000	2,934,000	+ 31,000
Goods-train traffic ...	278,000	270,000	+ 8,000	8,301,000	7,851,000	+ 450,000
Total receipts	565,000	565,000	—	13,937,000	13,535,000	+ 402,000
S.R. (2,176 mls.)						
Passenger-train traffic...	382,000	385,000	— 3,000	8,340,000	8,232,000	+ 108,000
Merchandise, &c. ...	67,000	63,000	+ 4,000	1,878,000	1,789,500	+ 88,500
Coal and coke ...	28,000	28,000	—	935,000	873,500	+ 61,500
Goods-train traffic ...	95,000	91,000	+ 4,000	2,813,000	2,663,000	+ 150,000
Total receipts	477,000	476,000	+ 1,000	11,153,000	10,895,000	+ 258,000
Liverpool Overhead ... (6½ mls.)	1,276	1,249	+ 27	33,753	33,226	+ 527
Mersey (4½ mls.) ...	4,206	4,096	+ 110	123,811	118,345	+ 5,466
*London Passenger Transport Board ...	521,800	521,700	+ 100	2,139,000	2,107,200	+ 31,800
IRELAND						
Belfast & C.D. pass. (80 mls.)	4,702	4,500	+ 202	73,649	73,990	— 341
,, ,, goods	537	586	— 49	15,695	15,885	— 190
,, ,, total	5,239	5,086	+ 153	89,344	89,875	— 531
Great Northern pass. (562 mls.)	14,550	12,800	+ 1,750	274,650	191,150	+ 83,500
,, ,, goods	8,150	7,650	+ 500	243,500	171,650	+ 71,850
,, ,, total	22,700	20,450	+ 2,250	518,150	362,800	+ 155,350
Great Southern pass. (2,158 mls.)	32,287	32,224	+ 63	679,747	654,076	+ 25,671
,, ,, goods	28,422	26,930	+ 1,492	956,977	894,971	+ 62,006
,, ,, total	60,709	59,154	+ 1,555	1,636,724	1,549,047	+ 87,677

* 4th Week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are however adjusted—See editorial note, p. 179.

British and Irish Railway Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices Aug. 1, 1934	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	31	50	−1
5% Con. Prefce. ...	109¾	69½	113	−½
5% Red.Pref.(1950)	109¼	87½	110½	—
4% Deb.	108 15/16	99¼	107½	+1
4½% Deb.... ...	108	100¾	108½	—
4½% Deb.... ...	116	106	116½	—
5% Deb.	128	117¼	127	+½
2½% Deb.... ...	65	60	69½	—
5% Rt. Charge ...	124	111½	125½	—
5% Cons. Guar. ...	122	103	123½	—
L.M.S.R.				
Ord.	29⅞	12⅛	21	−1
4% Prefce. (1923)	51	17	43½	−3½
4% Prefce. ...	72	33¼	78½	−1
5% Red. Prf. (1955)	93	47¼	99	−1½
4% Deb.	103¼	89½	102½	—
5% Red.Deb.(1952)	114	105	112½	+1
4% Guar.	97¼	68⅜	100	—
L.N.E.R.				
5% Pref. Ord. ...	22½	7¾	14¼	−2
Def. Ord.	10¾	4⅛	7¼	−⅝
4% First Prefce. ...	65½	19⅜	61½	−4
4% Second Prefc .	40½	12¼	27½	−4
5% Red.Pref.(1955)	83¾	27	82	−3½
4% First Guar. ...	94¾	58¼	94	−1
4% Second Guar.	89¼	48	89	−1
3% Deb.	77	60¼	76	—
4% Deb.	102¾	80	101	—
5% Red.Deb.(1947)	112	102½	109½	—
4½% Sinking Fund Red. Deb.	107½	98¾	107⅛	—
SOUTHERN				
Pref. Ord.... ...	71	27¾	71	−7
Def. Ord.	24⅜	9⅜	20½	−3
5% Prefce. ...	107 11/16	74	113	—
5% Red.Pref.(1964)	107¾	78⅞	111½	—
5% Guar. Prefce.	124¼	102¾	124½	—
5% Red.Guar.Pref. (1957)	115⅝	103½	114½	—
4% Deb.	107½	96¾	105½	+½
5% Deb.	126½	114¼	126½	—
4% Red. Deb. 1962–67	107¼	100	107½	—
BELFAST & C.D.				
Ord.	6	4	5	—
FORTH BRIDGE				
4% Deb.	99½	95½	101½	—
4% Guar. ...	98½	94	100½	—
G. NORTHERN (IRELAND)				
Ord.	7½	3½	5	—
G. SOUTHERN (IRELAND)				
Ord.	28	16	14	—
Prefce.	24	12⅛	16½	—
Guar.	42	16¾	46	—
Deb.	60	30⅞	63	—
L.P.T.B.				
4½% "A" ...	117⅞	112	117½	+½
5% "A"	127¼	119¼	128½	+1½
4½% "T.F.A." ...	111¼	106	110	+1
5% "B"	122½	114	121	—
"C"	86¾	74½	78½	−2
MERSEY				
Ord.	16¼	5	12	−1½
4% Perp. Deb. ...	83	63⅞	86½	—
3% Perp. Deb. ...	62	51	64½	—
3% Perp. Prefce....	50⅝	27	52½	—

* ex-dividend.

OFFICIAL NOTICES

THE MADRAS & SOUTHERN MAHRATTA RAILWAY CO. LTD. invite Tenders for:—

THREE BOILERS, "MH/S" CLASS, FOR 4-6-0 TYPE LOCOMOTIVES (Metre Gauge).

Tenders are due in on Tuesday, 28th August, 1934, by 2 o'clock p.m.
Tender Forms are obtainable at address below, fee ONE GUINEA, *which will not be returned.*
The Directors do not bind themselves to accept the lowest or any Tender.

Company's Offices:—
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ENGINEER, 36, experienced in electrical, diesel, railway and road transport work and management, M.Eng., A.M.I.E.E., A.M.Inst.T., Member Diesel Engine Users' Association. Fluent Spanish. Seeks better position or representation.—Box 14, c/o THE RAILWAY GAZETTE, 33, Tothill Street, Westminster, S.W.1.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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CONTRACTS AND TENDERS

J. Booth & Sons has secured a contract from the L.M.S.R. for the rebuilding of the goods shed at Banbury (Oxon) so as to provide a new warehouse with 200 sq. yd. of storage space.

L.M.S.R. Wagon Orders

The L.M.S.R. has placed orders for a total of 250 20-ton steel hopper wagons divided as follow:—Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., 200 wagons; and Hurst Nelson & Co. Ltd., 50 wagons.

The Fairfield Shipbuilding & Engineering Co. Ltd. has received an order from the L.M.S.R. for a paddle steamer for use on the River Clyde-Holy Loch service. The vessel, which will accommodate 1,200 passengers, is to be 195 ft. in length, 27 ft. in breadth, and 7 ft. 9 in. in depth. It will be propelled by a three crank, triple-expansion engine supplied with steam from a Navy type boiler, giving a service speed of 15½ knots.

The Great Western Railway has recently placed orders as follow:—

A. D. Dawnay & Sons Ltd.: Steelwork for extension of D warehouse, Cardiff Docks.
Vickers-Armstrongs Limited: Repairs to plating on outer and inner gates of Queen Alexandra dock lock, Cardiff Docks.
Horseley Bridge & Thomas Piggot Limited: Supply and erection of water softener at Crwys, Cardiff.
Patent Shaft & Axletree Co. Ltd.: Steelwork for reconstruction and widening of overbridge at Ealing Broadway.
Mitchell Conveyor & Transporter Co. Ltd.: Supply and erection of two electrically-driven chair conveyors at Hayes creosoting works.
Siemens & General Electric Railway Signal Co. Ltd.: Electrically-operated train-departure indicator.
New Switchgear Construction Co. Ltd.: Three-panel high-tension switchboard for North Dock sub-station, Swansea.
Alfred Herbert Limited: Hexagon turret lathe, Swindon Works.

Leyland Motors Limited has received orders for Tiger vehicles from the South African Railways & Harbours Administration and for oil-engined Lions from the Yorkshire Traction Co. Ltd., an L.N.E.R. and L.M.S.R. associated company.

Sentinel Locomotive for L.N.E.R.

The Sentinel Waggon Works Limited has received an order from the L.N.E.R. for one four-axled Sentinel steam locomotive. It is understood that the locomotive is to be generally similar in design to those recently constructed by this firm for the North Eastern Railway of Colombia and described and illustrated in the issue of THE RAILWAY GAZETTE for June 15, p. 1055-9. Steam from a coal-fired Woolnough boiler, with a working pressure of 335 lb. per sq. in., will be used. Each of the four axles will be separately driven by an engine having two 6-in. diam. cylinders.

More Diesel Trains for the Nord

La Société Franco-Belge de Matériel de Chemins de fer is to construct 10 diesel-electric trains to the order of the Northern Railway of France. An illustrated description of two triple-car high-speed diesel trains, comprising an earlier order placed by the Northern Railway of France with the same firm, appeared in the *Diesel Railway Traction Supplement* to THE RAILWAY GAZETTE for July 13 last.

The Indian Stores Department, Simla, has recently placed the following orders:

Skoda (India) Limited: 400 steel metre-gauge carriage and wagon tyres at a price of Rs. 18,550; Wright Pinhorn & Partners Limited; 500 buffer inner cases at total price of Rs. 4,640; 300 side buffers for four-wheeled broad gauge stock at total price of Rs. 16,444; 20 5 ft. 6 in. gauge driving crank axles at total price of Rs. 27,800; and 1,300 inside buffer cases at Rs. 7-3-9 each and 3,400 inside buffer cases at Rs. 9-6-6 each.
Shaw Wallace & Co. Ltd.: 1,000 mild steel broad gauge buffer cases, machined and bored, at a price of Rs. 11,380; 1,000 broad gauge side buffer cases at a price of Rs. 9,682; five type O straight axles at a price of Rs. 1,375 and seven type X at Rs. 1,435, 43 type Y at Rs. 7,267, 45 type Z at Rs. 9,203 and 12 type T at Rs. 17,340.
Samuel Osborn (India) Limited: 2,000 broad gauge buffer plungers complete wirh buffer spindles at total price of Rs. 37,333 free delivery Matunga; 3,000 13-in. broad gauge side buffer plungers at total price of Rs. 47,500, and 300 18 in. at total price of Rs. 6,150; and running contracts for buffer cases and shanks.
L. P. Winby & Co. (England) Ltd.: 2,400 outside buffer cases at total price of Rs. 20,813 free delivery Howrah.
Heatly & Gresham Limited: 500 outside buffer cases at total price of Rs. 4,750; eight BT locomotive crank axles at total price of Rs. 13,025, and two type V at total price of Rs. 2,547; 35,000 sets buffer recoil springs at total price of Rs. 30,052.
Jessop & Co. Ltd.: 65 type SI straight axles at total price of Rs. 14,706.
Vickers (India) Limited: 72 type W straight axles at total price of Rs. 18,144.
Martin & Co. Ltd.: 471 locomotive tyres at total price of Rs. 32,659.
Henry Williams India (1931) Limited: 316 carriage and wagon axles at total price of Rs. 43,569.
J. O'Hara Murray & Co. (India) Ltd.: 545 locomotive tyres at total price of Rs. 37,453.
Suren Piras & Co.: 519 locomotive tyres at total price of Rs. 47,460.
Balmer Lawrie & Co. Ltd.: 20 5 ft. 6 in. gauge locomotive crank axles at total price of Rs. 29,200.
William Jacks & Co.: 20 5 ft. 6 in. gauge locomotive crank axles at total price of Rs. 29,200.

From our Overseas Railway Affairs column in this week's issue it will be seen that the Standing Finance Committee for Railways in India has made provision in its rolling stock programme for 1935-36 for the expenditure of Rs. 274.88 lakhs to cover the purchase of locomotives, boilers, carriages and wagons. The numbers of locomotives and their types are given and it is also stated that the B.B. & C.I. Railway anticipates a fairly heavy locomotive renewal programme in future years and that an experimental diesel shunting locomotive is to be purchased

Roumanian Electrification

The main line of the Roumanian State Railways connecting Bucharest with Vienna, Paris and London is to be electrified between Campina, at the foot of the Carpathians on the East and Brasnov at the foot on the west, states a Reuters message from Bucharest. Tenders from all interested companies should be submitted to the Ministry of Communications in Bucharest. The distance to be electrified is about 50 miles and includes some very steep gradients. The cost of the work is estimated at over £1,000,000.

The Chinese Government Purchasing Commission has placed the following orders on behalf of the Ministry of Railways, China, and to the inspection of Messrs. Fox & Mayo, consulting engineers:—

British Steel Export Association: Approximately 1,406 tons of compound girders.
Broom & Wade Limited: Air compressors.
Tangyes Limited: Traversing screw jacks.
Thos. Summerson & Sons Ltd.: Car replacers.
Consolidated Pneumatic Tool Co. Ltd.: Pneumatic tools and rock drills.

Sir W. G. Armstrong Whitworth & Co. (Engineers) Limited has received an order from the Great Indian Peninsula Railway for 10 sets of locomotive cylinders for Caprotti gear and 10 sets for R.C. gear,

The South African Government Railways and Harbours Administration has placed orders for steel sleepers to a total value of £226,770, divided among the following firms:—Stahlwerks Verband; Soc. Com. de Belgiques; De Wendel & Cie; S.A. d'Angleur-Athus; Acieries de Micheville; and the Columenta Export Company, Orders have also been placed by the Administration with Clayton & Co. for fog signals and with Henry Gardner & Co. for electrolytic copper.

Railway Share Market

The stock and share markets have shown an increasing trend towards reducing prices against prospective sellers. This is not difficult to effect owing to the absence from markets of many dealers who would be prepared probably to quickly replenish their books with any line of stock offered at the present low quotations.

Immediately after the issue of the half-yearly statements by the four big companies on Thursday and Friday last, several prominent dealers in this market absented themselves on holiday. During the present week prices have tended to sink under the pressure of sales by holders whose speculative operations appear to have outrun their capacity to finance their purchases. In such circumstances it was not very surprising that Southern preferred stock should have fallen to 70 at one time, compared with 78 ruling on the eve of the half-yearly statement. It should not be overlooked by shareholders that the second half of the Southern's year is the more profitable of the two periods. On the assumption that the revised market estimate that the company should be able to show net earnings for 1934 equal to 3⅝ per cent. on the preferred ordinary is well-founded, the stock gives a yield of over 5 per cent. when around 70. L.M.S. 1923 preference stock is now expected to earn about 1¾ per cent. and on the current quotation (reduced on the week by about five points) the yield on this basis of earnings is about 3¼ per cent. It is now estimated in the market that the London & North Eastern should show 3¾ per cent. net earnings on the 4 per cent. first preference stock, and as it has dropped to around 61 the yield on this basis is over 6 per cent. The Great Western is estimated to be able to secure about ¾ per cent. net earnings on its ordinary stock, but as the view is still held that the 3 per cent. dividend for the whole year will be maintained, with the aid of reserves, in order to retain the trustee status, the market quotation for the stock has been less adversely affected by the past week's reports than any of the junior stocks. At around the current week's price the yield is about 6 per cent. The foregoing estimates are necessarily the outcome of much surmise as to the course of traffic receipts and working expenditure during the remainder of the year and they must be accepted accordingly.

The question of the wages negotiations between the companies and the Trades Unions is expected to remain the important factor influencing the market, although the traffic receipts, more especially on the Southern, are expected to be a strong contributory influence on prices.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1933–34	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1933	No. of Week	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1933	Prices: Lowest 1933	Prices: Aug. 1, 1934	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	29.7.34	16,870	+ 4,510	30	402,220	304,960	+ 97,260	Ord. Stk.	26	11⅝	21½	Nil
	Argentine North Eastern..	753	28.7.34	8,020	— 2,332	4	31,076	42,106	— 11,030	,,	14½	5	8	Nil
	Argentine Transandine ..	111	—	—	—	—	—	—	—	A. Deb.	55	40	50	8
	Bolivar	170	June, 1934	5,100	+ 250	26	38,750	42,000	— 3,250	6 p.c. Db.	10	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	15	11	12½	4
	Buenos Ayres & Pacific ..	2,806	28.7.34	68,427	— 17,561	4	282,592	354,394	— 71,802	Ord. Stk.	26	9⅞	11½	Nil
	Buenos Ayres Central ..	190	10.6.34	$117,800	+ $400	50	$5,340,053	$5,251,539	+ $88,514	Mt. Db.	30	10	21	Nil
	Buenos Ayres Gt. Southern	5,085	28.7.34	132,032	— 31,138	4	494,027	701,663	— 207,636	Ord. Stk.	44½	21½	25½	Nil
	Buenos Ayres Western ..	1,926	28.7.34	43,628	— 8,975	4	175,611	237,593	— 61,982	,,	34½	15¾	20½	Nil
	Central Argentine ..	3,700	28.7.34	133,430	— 6,846	4	518,168	618,042	— 99,874	,,	28½	15	16	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	18	10	8	Nil
	Cent. Uruguay of M. Video	273	28.7.34	14,222	+ 409	4	56,176	57,960	— 1,784	Ord. Stk.	20	8	8½	Nil
	Do. Eastern Extn.	311	28.7.34	2,668	+ 45	4	10,922	10,383	+ 539	—	—	—	—	—
	Do. Northern Extn.	185	28.7.34	1,686	+ 40	4	6,819	7,149	— 330	—	—	—	—	—
	Do. Western Extn.	211	28.7.34	1,077	— 41	4	4,298	4,762	— 464	—	—	—	—	—
	Cordoba Central	1,218	28.7.34	36,170	— 7,700	4	143,910	174,600	— 30,690	Ord. Inc.	9¼	2½	4½	Nil
	Costa Rica	188	May, 1934	16,659	— 2,382	48	197,823	213,331	— 15,508	Stk.	29	20	27½	7¼
	Dorada	70	June 1934	8,800	— 100	26	60,200	44,100	+ 16,100	1 Mt. Db.	76½	68¾	105	5 11/16
	Entre Rios	810	28.7.34	10,850	— 2,833	4	40,866	55,861	— 14,995	Ord. Stk.	26½	9	13½	Nil
	Great Western of Brazil ..	1,082	28.7.34	5,500	— 400	30	232,000	300,500	— 68,500	Ord. Sh.	23/6	1₂	5₈	Nil
	International of Cl. Amer.	794	June, 1934	$253,322	— $123,148	26	$2,719,995	$2,658,881	+ $61,114	—	—	—	—	—
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	1st Pref.	1₂	1/16	1₂	Nil
	La Guaira & Caracas ..	22⅝	June, 1934	3,880	+ 130	26	21,435	36,270	— 14,835	Stk.	16	10	8½	Nil
	Leopoldina	1,918	28.7.34	34,366	+ 6,525	30	683,035	692,038	— 9,003	Ord. Stk.	20¼	10	8½	Nil
	Mexican	483	21.7.34	$201,600	+ $27,100	3	$628,000	$553,500	+ $74,500	,,	3	1₂	2½	Nil
	Midland of Uruguay ..	319	June, 1934	8,199	— 242	52	111,908	102,566	+ 9,342	Ord. Stk.	2	1	1½	Nil
	Nitrate	401	15.7.34	7,619	+ 82	28	146,283	62,635	+ 83,648	Ord. Sh.	7 8/6	1 11/16	2 5/8	Nil
	Paraguay Central	274	21.7.34	4,950	+ 1,270	3	13,440	11,560	+ 1,880	Pr. Li. Stk.	72	49½	70⅝	8½
	Peruvian Corporation ..	1,059	June, 1934	54,342	+ 7,778	52	674,250	624,537	+ 49,713	Pref.	15¼	5	10	Nil
	Salvador	100	14.7.34	¢9,810	— ¢5,440	2	¢22,060	¢29,950	— ¢7,890	Pr. Li. Db.	70	66½	70	7⅛
	San Paulo	153½	22.7.34	30,225	+ 5,588	29	890,697	883,174	+ 7,523	Ord. Stk.	10 2	68	69	5 13/16
	Taltal	164	June, 1934	5,950	+ 105	52	69,595	44,295	+ 25,300	Ord. Sh.	1⅝	5₄	1¾	5 11/16
	United of Havana.. ..	1,365	28.7.34	18,706	+ 2,473	4	69,411	60,904	+ 8,507	Ord. Stk.	8	2	3	Nil
	Uruguay Northern ..	73	June, 1934	978	+ 35	52	13,533	16,440	— 2,907	Deb. Stk.	6	3½	4½	Nil
Canada.	Canadian National ..	23,748	21.7.34	637,757	+ 19,438	29	17,799,227	15,301,851	+ 2,497,376	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	60½	38	66	6 1/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	99⅝	85	101½	3 15/16
	Canadian Pacific	17,018	21.7.34	502,000	+ 43,400	29	12,898,400	11,521,800	+ 1,376,600	Ord. Stk.	22⅛	11	13	Nil
India.†	Assam Bengal	1,329	30.6.34	28,222	+ 4,408	13	359,997	284,659	+ 75,338	Ord. Stk.	79	70	79	3 15/16
	Barsi Light..	202	7.7.34	1,905	— 6,292	14	42,292	49,065	— 6,773	Ord. Sh.	101 5/8	70	100½	6
	Bengal & North Western..	2,112	7.7.34	46,243	+ 6,163	14	761,053	736,694	+ 24,359	Ord. Stk.	292	240	277½	5¾
	Bengal Dooars & Extension	161	7.7.34	2,421	— 198	14	33,854	35,227	— 1,373	,,	127	119	125	5⅞
	Bengal-Nagpur	3,269	30.6.34	106,875	+ 2,557	13	1,554,435	1,398,916	+ 155,519	,,	97¼	83½	101½	3 16/16
	Bombay, Baroda & Cl. India	3,072	21.7.34	129,150	+ 8,925	16	2,595,075	2,487,000	+ 108,075	,,	112	107	109½	5½
	Madras & South'n Mahratta	3,230	7.7.34	104,700	— 10,731	14	1,674,807	1,702,346	— 27,539	,,	127	114¼	126½	7⅛
	Rohilkund & Kumaon ..	546	7.7.34	7,827	+ 455	14	151,142	145,608	+ 5,534	,,	260	225	250½	6 1/16
	South India	2,526	30.6.34	83,529	+ 605	13	1,088,775	1,048,064	+ 40,711	,,	119½	112	115½	6 5/16
Various.	Beira-Umtali	204	May, 1934	58,872	+ 10,741	34	399,848	322,728	+ 77,120	—	—	—	—	—
	Bilbao River & Cantabrian	15	June, 1934	1,358	— 361	26	10,459	8,063	+ 2,396	—	—	—	—	—
	Egyptian Delta	621	10.7.34	5,839	+ 642	15	52,942	51,128	+ 1,814	Prf. Sh.	13 1/32	1⅝	1⅞	5 5/16
	Great Southern of Spain ..	104	21.7.34	1,601	+ 319	29	60,449	57,627	+ 2,822	Inc. Deb.	4	3	3½	Nil
	Kenya & Uganda	1,625	Mar., 1934	240,520	+ 21,064	12	638,137	606,192	+ 31,945	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	33½	40	8¾
	Mashonaland	913	May, 1934	106,858	+ 32,902	34	731,020	502,675	+ 228,345	1 Mg. Db.	91⅝	42	92 1/2	5 3/8
	Midland of W. Australia ..	277	May, 1934	12,136	— 1,095	48	146,177	144,075	+ 2,102	Inc. Deb.	89	70	97½	4⅛
	Nigerian	1,905	2.6.34	29,365	+ 2,278	9	245,566	217,693	+ 27,873	—	—	—	—	—
	Rhodesia	1,538	May, 1934	171,670	+ 38,452	34	1,236,395	915,804	+ 320,591	4 p.c. Db.	98½	80⅝	102	3 15/16
	South African	13,180	7.7.34	534,109	+ 59,360	14	6,800,285	5,953,902	+ 846,383	—	—	—	—	—
	Victorian	6,172	Apl., 1934	693,410	— 69,054	43	7,335,168	7,788,758	— 453,590	—	—	—	—	—
	Zafra & Huelva	112	June, 1934	10,078	— 121	26	65,801	62,326	+ 3,475	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value.